

**CLASS 84, MUSIC****SECTION I - CLASS DEFINITION**

This class includes the instruments used in producing music and includes (1) electrical music instruments, (2) automatic instruments, and (3) those hand played. The automatic instruments and the hand played instruments have a parallel classification so far as seems practical, and in both the patents are divided in the usual way into four groups, stringed, wind, rigid vibrators, and membranes. Then follow details or features common to groups (1), (2), and (3). This class also includes some accessory devices generally recognized as belonging to the art or industry.

**SECTION II - LINES WITH OTHER CLASSES AND WITHIN THIS CLASS**

Instruments furnishing a sound of only one pitch, even if it might be used for musical purposes, are generally to be found in Class 116, Signals and Indicators, Class 446, Amusement Devices: Toys, subclasses 207+ and 397+, Class 472, Amusement Devices, subclass 64 or Class 623, Prosthesis (i.e., Artificial Body Members), Parts Thereof or Aids and Accessories Therefor, subclass 9 for larynxes.

Phonographs, unless in combination with a recognized musical instrument, are to be searched for in Class 369, Dynamic Information Storage or Retrieval.

Printed music and systems of notation are to be found in Class 84 (this class), Music, subclass 483.2.

Bellows and wind flow regulators, unless specifically adapted to musical instruments are to be found in Class 60, Power Plants, subclasses 407+, Class 91, Motors: Expansible Chamber Type; Class 92, Expansible Chamber Devices and Class 417, Pumps.

Many features of construction or manufacture should be sought for in woodworking or metal-working and many details not limited to this art in appropriate classes, as pedals, supports, clamps, cases, springs, etc.

For instrument supports of general application not claimed in combination with musical instruments or structurally limited to use with specific musical instruments, see Class 248, Supports, appropriate subclasses.

**SECTION III - REFERENCES TO OTHER CLASSES****SEE OR SEARCH CLASS:**

- 381, Electrical Audio Signal Processing Systems and Devices, subclass 118 for amplifying and reproducing the sounds of musical instruments.
- 984, Musical Instruments, an alternative search of the type of subject matter generally found in Class 84 may also be found in Class 984 which is based on a modification of the European Patent Office.

**SUBCLASSES**

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| 1 | This subclass is indented under the class definition. Patents not classified in any of the subclasses below.              |
| 2 | The instrument includes two sets of sounding-bodies which belong to different groups, as specified above.                 |
|   | (1) Note. Drums, chimes, etc., used as attachments to pianos belong here or in subclass 3 or subclass 6.                  |
| 3 | The instruments have electric circuits.   |
| 4 | A piano or other accompaniment is provided for a phonograph cylinder or disk.   |
|   | (1) Note. Continue the search in subclass 1.02 of this class.   |
|   | (2) Note. For synchronizing a sound-producer with a cinematograph see Class 352, Optics: Motion Pictures, subclasses 12+. |
| 5 | The synchronizing devices include electric circuits.  |
| 6 | The sounding-bodies of one or both sets are operated by player-pneumatics.  |
| 7 | String-playing devices not belonging in a specific subclass.  |
| 8 | Self-playing banjos, mandolins, zithers, etc., often with fingering devices and pneumatic mechanism.                      |

<b>9</b>	The instruments have electric circuits.	<b>23</b>	This subclass is indented under subclass 21. Devices similar to those of ... , but the piano-key is not involved.
<b>10</b>	Self-playing violins, usually with fingering or stopping devices, sometimes with pneumatic mechanism.	<b>24</b>	This is the common type of player-piano. The blows are caused by small bellows called "striker-pneumatics", one to each hammer. The patents generally disclose a complete mechanism and often claim details of selecting mechanism as well as the playing mechanism.
<b>11</b>	The instruments have electric circuits.	<b>25</b>	Like the preceding subclass except that the striker-pneumatic acts on the key.
<b>12</b>	Stringed instruments of various types with strikers, sometimes operated by pneumatics.		
<b>13</b>	Patents for the complete instrument or for features not specific to a subclass below.		
	(1) Note. For players readily removable from the piano and applicable also to a reed-organ keyboard see this class, subclasses 105 to 114.		(1) Note. For this feature see also this class, subclass 105 and indented subclasses.
	(2) Note. If the invention is limited to features of the selecting mechanism, see this class, subclass 115 and the indented subclasses.	<b>26</b>	Patents showing a pneumatic action built into a grand piano.
<b>14</b>	Instruments of the piano type for automatic playing exclusively.	<b>27</b>	Patents claiming novelty in the connections from the pneumatics to the grand-piano action.
<b>15</b>	Automatic pianos having the strings in two narrow sets.	<b>28</b>	Limited to patents in which the claims in terms or in substance require the striker-pneumatics to be above the keyboard.
<b>16</b>	The blow is struck by power derived from a rotating shaft or other constantly-operating source.	<b>29</b>	Similarly limited to cases having the pneumatics below the keyboard.
<b>17</b>	The connections between the source of power and the strikers are controlled electrically.	<b>30</b>	Patents in which the parts are fitted into the piano in a novel way or are located in unusual positions.
<b>18</b>	The power acts directly on the keys. Most of the patents here and in the preceding subclass are of the roller-and-shoe type.		(1) Note. If only the tracker-box location is novel, see this class, subclass 116.
<b>19</b>	The power is derived from a source of electricity.	<b>31</b>	The tracker has two sets of rows of note perforations, both normally in use to obtain expression.
<b>20</b>	The power acts on the keys.		(1) Note. Compare this class, subclasses 146, 148 and 152.
<b>21</b>	These patents include means for varying the force of the blow, usually electric resistances.	<b>32</b>	The two rows are in the same line, so that the tracker is longer than usual.
<b>22</b>	Expression is secured by varying the voltage.	<b>33</b>	Miscellaneous devices for giving expression to the music.
			(1) Note. In the art the term "expression" usually refers only to controlling the

- force of the blow. For tempo control see this class, subclass 128, etc.
- 34** The pedals or other parts of the piano are moved for expression.
- (1) Note. Compare this class, subclasses 216 to 224.
- 35** The hammer rest-rail is shifted, usually in sections and without depressing the pedal.
- (1) Note. Compare this class, subclass 219, etc.
- 36** Normally the hammers are in position for pianissimo effect.
- 37** The rest-rail is automatically shifted as the wind-pressure in the reservoir varies.
- 38** The ends of the rest-rail may move through unequal distances, so the musical effect is graduated from bass to treble.
- 39** The pressure of wind supplied to some or all of the striker-pneumatics is varied to obtain accent.
- 40** The variation is due to a change in the pumping.
- 41** The variation is due to a change in the cross-section of the wind-passage.
- 42** The variation is due to the action of a variable chamber additional to the reservoir.
- 43** The variation is due to the alternate use of two wind-chambers holding air, respectively, at high and low tension.
- 44** There are two striker-pneumatics for each note, one or both of which may be used.
- 45** The movement of the striker-pneumatic may be retarded by another pneumatic.
- 46** The fulcrum of a lever is shiftable or the connections between the pneumatic and the hammer are otherwise varied.
- 47** The force of the blow is systematically or periodically varied independently of the hand-controllers or note-sheet.
- (1) Note. Compare this class, subclass 157.
- 48** Pneumatic details limited to parts of the expression mechanism.
- (1) Note. See this class, subclass 50 for similar constructions which do not have this limitation.
- 49** Levers or buttons for controlling expression. The patents generally show also tempo-controllers.
- (1) Note. See this class, subclasses 164 and 169.
- 50** Improvements in the controlling parts between the reservoir and the striker-pneumatics.
- (1) Note. Compare this class, subclasses 48, the patents in which are limited to expression mechanism, and 79, which does not include controlling-pneumatics.
- 51** The pneumatic train includes both primary and secondary valves, sometimes called the "double-valve system".
- 52** The lower leaf of the striker-pneumatic is the movable one.
- 53** Like the preceding subclass except that there is no secondary valve.
- 54** The striker-pneumatics are located in the wind-chest.
- (1) Note. Pneumatics in a wind-chest to operate valves are shown in many patents in this art and in the organ art.
- 55** The construction involves many duplicate parts that are readily detachable.
- 56** These parts are of metal.
- 57** Patents involving the position or location of tubes from the tracker or other part and means for connecting tubes, as junction plates or bars.

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| <p><b>58</b> Constructions having minute openings into a passage, especially into a tracker-duct.</p> <p><b>59</b> The bleed is closed by a valve during part of the cycle of operations.</p> <p><b>60</b> Patents pertaining to automatics having novelty in the valve or its seat.</p> <p><b>61</b> Patents for double valves the operating-surfaces of which face one another.</p> <p><b>62</b> Patents for double valves the operating-surfaces of which face away from one another.</p> <p><b>63</b> Similar to the preceding except that the distance between the surfaces is adjustable.</p> <p><b>64</b> Means to prevent dust from entering the action or for removing it.</p> <p><b>65</b> Pneumatics to strike the keys or throw the hammers or exert power otherwise.</p> <p>(1) Note. For pneumatics to shift the valves see this class, subclasses 50+.</p> <p><b>66</b> Patents covering various forms of connections between the pneumatic and the hammer.</p> <p><b>67</b> The connection engages the key.</p> <p><b>68</b> The connection engages the abstract.</p> <p><b>69</b> The connection engages the wippen.</p> <p><b>70</b> Means not otherwise classified pertaining to the supply of wind.</p> <p>(1) Note. See this class, subclass 355.</p> <p>SEE OR SEARCH CLASS:<br/>417, Pumps, appropriate subclass for a pump, per se.</p> <p><b>71</b> The construction is specially fitted for grand pianos.</p> <p><b>72</b> Pedals connected to operate bellows.</p> <p>(1) Note. For piano-pedals see this class, subclasses 225+ and for organ-pedals, subclasses 353 and 357.</p> | <p><b>73</b> The pedals may be folded into the piano-case.</p> <p><b>74</b> Devices to lock the keys when the pedals are drawn out.</p> <p>(1) Note. For other key-locks see this class, subclass 167.</p> <p><b>75</b> Pedals with doors to hide them.</p> <p><b>76</b> Mechanism to open the doors and throw down the pedals by a single action of the performer.</p> <p><b>77</b> The pedal is attached to the inside of the door.</p> <p><b>78</b> The panel in front of the tracker-box is shifted simultaneously with the pedal-door.</p> <p><b>79</b> Various elements between the bellows and the controlling-pneumatics, especially reservoirs and wind-chests.</p> <p>SEE OR SEARCH CLASS:<br/>417, Pumps, subclasses 279+ for pumps having condition responsive control of the fluid handled by the pump.</p> <p><b>80</b> The key-slip or part of it is movable to uncover or shift various parts preparatory to playing.</p> <p><b>81</b> Improvements relating to the panel in front of the tracker-box.</p> <p><b>82</b> Improvements relating to the panel in front of the pedals.</p> <p>(1) Note. If the pedals are claimed, see this class, subclasses 75+.</p> <p><b>83</b> Automatic wind instruments not otherwise classified, as accordions, flutes, etc.</p> <p>(1) Note. For features not limited to automatic instruments see this class, subclass 330, and indented subclasses.</p> <p><b>84</b> Miscellaneous organ constructions having either pipes or reeds, or both.</p> <p><b>85</b> Improvements in the stop-action.</p> <p><b>86</b> The selection of notes is determined by pins on a cylinder.</p> |
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| <p><b>87</b> The selection of notes is determined by projections or perforations on a disk.</p> <p><b>88</b> Electropneumatic organs with automatic control.</p> <p><b>89</b> Pneumatic organs with automatic control only.</p> <p><b>90</b> Pneumatic organs with both automatic and key control.</p> <p><b>91</b> Pneumatic pipe-organs with automatic control.</p> <p><b>92</b> Small reed-organs with hand-operated bellows and a paper sheet serving as valves for the reeds.</p> <p><b>93</b> The instruments are small enough to be blown by the player.</p> <p><b>94.1 Combs:</b><br/>Miscellaneous instruments having a comb the teeth of which are tuned to be the sounders.</p> <p>SEE OR SEARCH CLASS:<br/>132, Toilet, subclasses 219+ for toilet combs.</p> <p><b>94.2 Combined:</b><br/>Miscellaneous instruments combined with other art devices.</p> <p><b>95.1 Cylinder type:</b><br/>This subclass is indented under subclass 94.1. Subject matter wherein the teeth of the comb are picked by pins on a rotating cylinder. Includes Swiss music-boxes.</p> <p><b>95.2 Combined:</b><br/>This subclass is indented under subclass 95.1. Subject matter combined with other art devices.</p> <p><b>96</b> Details of the construction of the cylinder.</p> <p>(1) Note. See this class, subclass 86.</p> <p>SEE OR SEARCH CLASS:<br/>492, Roll or Roller, subclasses 30+ for a roll, per se, not elsewhere provided for, with a working surface having projections, indentations, or slits.</p> | <p><b>97</b> The teeth of the comb are picked by projections on a rotating disk. Includes Regina music-boxes.</p> <p><b>98</b> Star-wheels are used between the disk and comb.</p> <p><b>99</b> Instruments with two or more disks and generally with devices for setting them in playing position. Some are coin-controlled.</p> <p><b>100</b> The motor of the music-box is utilized to drive a spindle for a phonograph.</p> <p><b>101</b> The selector is a note-sheet and usually operates star-wheels. Sometimes the sheet controls the protrusion of pins beyond the surface of a cylinder.</p> <p><b>102</b> Automatic instruments having vibrating bars and not elsewhere classifiable.</p> <p>(1) Note. Compare this class, subclasses 2, 3, 6, 403, 404, and 405.</p> <p><b>103</b> Automatic instruments having vibrating bells and not elsewhere classifiable.</p> <p>(1) Note. Compare this class, subclasses 406 and 407.</p> <p><b>104</b> Automatic instruments having vibrating drums and not elsewhere classifiable.</p> <p>(1) Note. Compare this class, subclasses 2, 3 and 6.</p> <p><b>105</b> Instruments including a sheet or other selector, playing mechanism, and striker to act on the keys of a piano or organ and readily separable from the latter. Some have a set of reeds or other sounders.</p> <p>(1) Note. Unless the construction is limited to an outside player search should be made under this class, subclass 24 and indented subclasses.</p> <p><b>106</b> The selector is a cylinder or disk.</p> <p><b>107</b> The power is electromagnetic or electropneumatic.</p> |
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| <p><b>108</b> The instrument stands on the floor instead of on the piano.</p> <p><b>109</b> Means for detachably holding the cabinet to the piano.</p> <p><b>110</b> The playing mechanism includes pneumatics.</p> <p>(1) Note. Unless the construction is limited to an outside player search should be made under this class, subclass 24 and indented subclasses.</p> <p><b>111</b> Details of the strikers or fingers that engage the piano-keys.</p> <p><b>112</b> The key-striker is operated from a constantly-moving source of power.</p> <p><b>113</b> The engagement between the source of power and the striker is controlled electrically.</p> <p><b>114</b> The engagement between the source of power and the striker is controlled pneumatically.</p> <p><b>115</b> The means for determining which notes of the piano, organ, etc., shall be sounded. It usually includes a tracker-bar, a perforated sheet, and driving means.</p> <p>(1) Note. These features are shown in automatic telegraphs and in patents in many other subclasses of this class, and are sometimes claimed along with playing mechanism, as in subclass 24, and indented subclasses.</p> <p>(2) Note. This subclass includes also details and optical or other attachments to the selector not otherwise classified.</p> <p>(3) Note. For indicators see this class, subclass 169.</p> <p><b>116</b> The invention is in the location or connection of the tracker-box.</p> <p>SEE OR SEARCH THIS CLASS, SUB-CLASS:<br/>30,</p> <p><b>117</b> The note-sheet acts mechanically on movable fingers.</p> | <p>(1) Note. For electrical fingers see this class, subclass 147.</p> <p><b>118</b> The instrument carries a plurality of note-sheets and means for driving them.</p> <p><b>119</b> Two sheets are operated simultaneously.</p> <p><b>120</b> The sheets are brought one at a time over a single tracker-bar and then driven separately.</p> <p><b>121</b> Various unusual forms of note-sheets and their feeding means, such as folding sheets, endless sheets, etc.</p> <p><b>122</b> Inventions for moving a sheet not elsewhere classifiable.</p> <p>(1) Note. For simple friction-rolls see this class, subclass 92.</p> <p><b>123</b> Electric mechanism is involved.</p> <p><b>124</b> Means to carry rolls of different type or different compass one at a time.</p> <p><b>125</b> The mechanism for driving the sheet forward and back includes a shifting-gear and clutch.</p> <p><b>126</b> The mechanism for driving the sheet forward and back includes two clutches.</p> <p><b>127</b> The mechanism for driving the sheet forward and back includes gears.</p> <p><b>128</b> Means for regulating the constant or momentary speed of the note sheet-tempo control.</p> <p>(1) Note. For hand-controllers see this class, subclass 49.</p> <p><b>129</b> Patents including this specific variable friction-gear.</p> <p><b>130</b> The speed is controlled by regulating the supply of wind to air-motors.</p> <p><b>131</b> Means to keep the tempo constant as the diameter of the take-up roll increases.</p> |
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- SEE OR SEARCH CLASS:  
242, Winding, Tensioning, or Guiding, subclasses 540+ for drive mechanisms for convolute winding in general, particularly subclass 541 for a linear winding drive.
- 132** Miscellaneous devices for feeding a note-sheet forward. Includes some special take-up rolls.
- (1) Note. Simple feed-rolls are mostly in this class, subclass 92.
- SEE OR SEARCH CLASS:  
226, Advancing Material of Indeterminate Length, appropriate subclasses for methods of, and apparatus for, feeding material without utilizing the leading or trailing ends to effect movement of the material.  
242, Winding, Tensioning, or Guiding, subclasses 520+ for convolute winding in general.
- 133** Devices involved in rewinding, as springs and weights.
- 134** Means to regulate the tension on the note-sheet.
- SEE OR SEARCH CLASS:  
242, Winding, Tensioning, or Guiding, subclasses 410+ for tension control of running material in general.
- 135** Means to control the pressure of the note-sheet on the tracker-bar.
- 136** Means to insure proper registration of the sheet perforations with the tracker-holes, usually automatic. The tracker may be shifted, or one or both rolls. Centering or guiding means.
- SEE OR SEARCH CLASS:  
226, Advancing Material of Indeterminate Length, subclass 10 for means to sense and position material of indeterminate length.  
242, Winding, Tensioning, or Guiding, particularly subclasses 548+ and 615+ for guides of web material in general.
- 137** The shifting is controlled by one or more movable fingers or other detectors at the edge of the sheet.
- 138** The shifting is done by bellows controlled by the detector.
- 139** The shifting is controlled by a single detector.
- 140** The tracker has extra holes near its ends to control the shifting. The sheet may or may not have extra cooperating perforations.
- 141** There is only one extra hole to control the shifting in both directions.
- 142** Holes near the middle of the tracker are vented by note perforations in the sheet.
- 143** One flange (or both) is shifted on one or both rolls.
- 144** The tracker-bar or some other part is shifted by hand. This feature is found in many patents in preceding subclasses. The shift may be great enough to cause transposition.
- 145** The relative shift of the tracker and sheet is through one or more semitones to cause a change of key.
- (1) Note. See this class, subclass 144.
- 146** Both the tracker and the sheet are modified. Includes devices for violins, etc.
- SEE OR SEARCH THIS CLASS, SUBCLASS:  
31, and 32.
- 147** Electric circuits are controlled instead of pneumatic ducts.
- (1) Note. See this class, subclass 160.
- 148** Provision is made for control of stops.
- 149** The tracker is vertical.
- 150** The sheet has two sets of perforations, one set to be used as usual, the other to be used during rewinding.

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| <p><b>151</b> Special forms or construction of the tracker or attachments thereto.</p> <p><b>152</b> Especially to allow the use of sixty-five or eighty-eight note-sheets at will. There are covers or other means to close either set of ducts.</p> <p>(1) Note. In the trackers of subclass 31 both rows are in use together.</p> <p><b>153</b> The two rows of holes are in the same bar or in bars fixed together.</p> <p><b>154</b> The bar is pivoted.</p> <p><b>155</b> Slide-valves determine which row shall be used.</p> <p><b>156</b> Means to close a few ducts at the end of a row if a narrow sheet is used or to close all during rewinding or skipping.</p> <p><b>157</b> To avoid mechanically-accurate playing.</p> <p>(1) Note. Compare this class, subclass 47.</p> <p><b>158</b> The tracker-bar is of metal.</p> <p><b>159</b> The bar is adjustable in length.</p> <p><b>160</b> The tracker-bar has ducts admitting air to pouches or small bellows that operate electric switches.</p> <p><b>161</b> Improvements in the sheet, its material, construction, perforations, or attachments.</p> <p><b>162</b> Improvements at the free end of the sheet or in means for joining two ends together.</p> <p><b>163</b> Perforations for two successive notes overlap to produce a legato effect or for accent, etc.</p> <p><b>164</b> The sheet bears lines or other marks to indicate the proper expression or tempo.</p> <p>(1) Note. For cooperating parts see this class, subclasses 49 and 169.</p> <p><b>165</b> The sheet bears words or marks to indicate a vocal part.</p> | <p><b>166</b> The sheet or disk has projections, sometimes adjustable, instead of perforations.</p> <p>(1) Note. See this class, subclass 97, and indented subclasses.</p> <p><b>167</b> Means to prevent the keys from moving as the piano is played.</p> <p>(1) Note. See this class, subclass 74.</p> <p><b>168</b> Means, usually pneumatic, for sounding two notes together, especially octaves.</p> <p><b>169</b> Indicators of various kinds connected to automatic instruments.</p> <p><b>170</b> Instruments having sounders belonging to two of the four groups, as a piano or organ with bell, bar, or drum attachment.</p> <p><b>171</b> Combined instruments employing electric circuits.</p> <p><b>172</b> Combination of a piano and reed (or pipe) organ, often with means for disconnecting one set of sounders from the keys.</p> <p><b>173</b> Miscellaneous stringed instruments and devices relating thereto not classifiable elsewhere. Includes Aeolian harps.</p> <p>(1) Note. Continue the search in subclass 1.16 of this class.</p> <p><b>174</b> Miscellaneous patents showing pianos of unusual shape or claiming several features or not elsewhere classifiable.</p> <p>(1) Note. Many features of a piano are common to other instruments and should be searched for in appropriate subclasses of automatic, stringed, or wind instruments, rigid vibrators, or general features in this class.</p> <p>(2) Note. For pianos having bells or other sounding attachments see this class, subclasses 170, 171 and 172.</p> <p><b>175</b> Two sets of strings and sometimes two keyboards.</p> |
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- 176** The piano is conveniently separable into parts, especially for ease of transportation.
- 177** The improvements are in the case.
- (1) Note. For key-beds or key-bottoms see this class, subclasses 430 and 431.
- (2) Note. For cases for pneumatic pianos see this class, subclasses 75, 80, 81, and 82.
- 178** The improvements related to both the music-desk and the fall-board over the keys.
- 179** The improvements relate to the fall-board alone. Includes devices for equalizing the movements of the ends.
- 180** The improvements relate to the music desk or rack.
- 181** The case has pockets or shelves for holding music or music-rolls.
- 182** The case has shutters or slides to control the escape of sound.
- SEE OR SEARCH THIS CLASS, SUB-CLASS:  
189, 346 and 372.
- 183** Means to protect the case, especially around the pedals.
- SEE OR SEARCH THIS CLASS, SUB-CLASS:  
177,
- 184** All three parts are modified.
- 185** Both parts are modified.
- 186.1 Frames:**  
This subclass is indented under subclass 174. Subject matter having improvements in the frames or backs of wood or metal.
- 186.2 Wrest planks:**  
This subclass is indented under subclass 186.1. Subject matter having improvements in the wrest planks.
- 187** Improvements in the two features.
- 188** Improvements in the metal plate.
- SEE OR SEARCH THIS CLASS, SUB-CLASS:  
200, and 209, and the subclasses indented thereunder.
- 189** Devices to communicate to the air vibrations due to the strings or to modify them in loudness or quality. These devices do not directly affect the movement of the strings.
- (1) Note. Some expression devices (subclass 216, etc.) might come under this broad definition; but most of them affect the amplitude or form of vibration of the strings and are under control of the player.
- SEE OR SEARCH THIS CLASS, SUB-CLASS:  
182, 224, 234, 294, and 295.
- 190** Resonant supports on which the instrument may stand.
- 191** Devices supposed to prevent the wasteful transmission of energy, as to the floor.
- 192** The principal means by which the energy of the vibrating string is communicated to the air.
- 193** Sounding-boards made of unusual material, especially metal.
- 194** Boards additional to the main sounding board. Hollow bodies analogous to a violin.
- 195** Modifications in the location, arrangement, or structure of the ribs.
- 196** Means to maintain the board in an arched form.
- SEE OR SEARCH THIS CLASS, SUB-CLASS:  
184, through 188.
- 197** Modifications in the location or arrangement of the strings.
- 198** Extra strings or extensions furnishing unisons or harmonics. They may be struck by the hammer or may vibrate sympathetically.

- 199** Special material or construction of the strings.
- (1) Note. For spirally wrapped strands of general application, see Class 57, Textiles: Spinning, Twisting, and Twining, subclasses 210+.
- 200** Miscellaneous devices for straining the strings.
- SEE OR SEARCH THIS CLASS, SUB-CLASS:  
304, 305 and 306.
- 201** Integral pins.
- 202** Pins with means for locking them or for increasing the friction.
- 203** Those devices that involve two pins.
- 204** Those devices that involve a worm-gear.
- 205** The string is pulled directly, not wound on a pin.
- 206** The string is fastened to a movable block.
- 207** The string is fastened to a lever.
- 208** The tuning-pin deflects the string from a straight line.
- 209** Patents for bridges not belonging in the subclasses below.
- (1) Note. The vibrating length of the string is determined by its bearing on the two bridges, one on the sounding-board and the other usually on the wrest-plank or on the string-plate. If on the plate, it is sometimes distinguished as the "scale rib". If the two bridges are not on the same side of the string, the one near the hammer-line may be called "inverted". Often the hammer-stroke tends to lift the string from the bridge on the plank, so in some early pianos a sort of screw-eye called an "a gaffe" was used, while in later times many sorts of clamps or holders have been devised to hold the strings on their bridges, and confusing names have been given them.
- 210** This subclass is indented under subclass 209. See Note to ... .
- 211** This subclass is indented under subclass 209. See Note to ... .
- 212** The principal bridge, usually long, curved and near the hitch-pins.
- 213** Means on the bridge for clamping or holding the strings in place.
- 214** Means for clamping or holding a string not on the main bridge.
- 215** Bars for holding the strings firmly against the bridge on the string-plate. Sometimes called "capo-tasto bars".
- 216** Various means for changing the quality of tone of a piano.
- (1) Note. See Note to this class, subclass 189.
- 217** Many or all of the dampers are lifted, so that their strings may enter into sympathetic vibration. This is the ordinary "forte" arrangement controlled by the damper-pedal.
- 218** The sustaining or third pedal device to retain only those dampers which are raised by the keys at the time the damper is applied.
- 219** Devices to soften the blow of the hammer or produce a softer sound. They may render the piano silent.
- SEE OR SEARCH THIS CLASS, SUB-CLASS:  
35+,
- 220** A curtain is interposed between the hammer and the strings. Called in old patents "celeste".
- 221** This is the common modern construction.
- 222** Devices to prevent a gap in the connections between the keys and hammer-butts.
- 223** Similar devices adapted to grand-actions.

- 224** Small weighted tongues in the path of the hammers to strike the strings. Sometimes called a “mandolin attachment”.
- 225** Means to operate the expression devices and details thereof.
- SEE OR SEARCH THIS CLASS, SUB-CLASS:  
216, and indented subclasses.
- 226** Means to hold the mechanism in operated position.
- 227** One of the levers is carried on a spring instead of on bearings.
- 228** Bearings specially adapted for use in this mechanism.
- 229** The exposed levers of the mechanism.
- 230** Pedals supplementary to the usual pedals, generally for children's use.
- (1) Note. Similar devices are found in this class, subclass 358, and in Class 74, Machine Element or Mechanism, subclasses 512, and indented subclasses, and 560, and indented subclasses.
- 231** The supplementary part is clamped to the pedal.
- 232** The supplementary part is carried on a footstool.
- 233** Devices to prevent the entrance of mice through the pedal-openings.
- (1) Note. See this class, subclass 353.
- 234** Means to touch a string at the middle or other nodal point, so causing it to produce a harmonic tone.
- 235** Devices to operate two hammers from a single key.
- SEE OR SEARCH THIS CLASS, SUB-CLASS:  
373, and 424.
- 236** This subclass is indented under subclass 423. Patents covering the parts between the key and the strings, usually called collectively, a “piano-action”. The keys are not treated as parts of the action. (See ... ).
- (1) Note. The title distinguishes from the pedal-actions of an ordinary piano.
- SEE OR SEARCH THIS CLASS, SUB-CLASS:  
323, 324, for simple actions.  
426, for pedals to operate the hammers.
- 237** These actions are mostly for the old type of square pianos.
- 238** The hammers strike downward instead of upward.
- 239** The modern standard action of the Herz- Erard type, in which the jack and repetition-lever both engage the nose on the hammer.
- (1) Note. For other types see this class, subclass 237.
- 240** Miscellaneous types of action for pianos having strings in a nearly vertical plane.
- 241** The jack positively retracts the hammer, so that a bridle is not needed.
- 242** The common action, each unit of it including a wippen carrying a jack, a damper-spoon, a back-check, and a bridle-wire.
- 243** Patents for features not elsewhere classifiable.
- 244** The hammer is driven by power controlled by the key.
- 245** Devices for producing sustained tone instead of the ordinary evanescent one.
- (1) Note. Continue the search in subclasses 1.05 and 1.06 and indented subclasses of this class.
- 246** The striker is moved by an electromagnet.

- 247** Actions designed to give the player constant control of the hammer, such as clavichord players had.
- 248** The jack is pivoted at its top and escapes at the bottom.
- 249** The jack is pivoted at top and bottom and jointed near the middle--a kind of reversed toggle.
- 250** Frames carrying the parts of the action and the rails of the expression devices.
- 251** The hingelike parts by which the moving parts are attached to one another or to the rails.
- 252** Several flange units are integrally connected together.
- 253** Devices for catching the hammer and holding it at rest after it has recoiled from the string.
- 254** Improvements in the striking parts of the hammer and in hammer-felts.
- SEE OR SEARCH CLASS:  
144, Woodworking, subclass 29 for piano-hammer felting.
- 255** Improvements in damper-heads.
- (1) Note. Dampers are shown in numerous patents for pianos or piano-actions or automatic pianos or stringed instruments.
- 256** Instruments having many strings excited by friction; "violin-pianos".
- (1) Note. Compare this class, subclass 325 and 326.
- 257** In these the exciting means is a belt.
- (1) Note. Compare this class, subclasses 325 and 326.
- 258** The strings are picked, somewhat as in the old harpsichords.
- SEE OR SEARCH THIS CLASS, SUB-CLASS:  
320,
- 263** Instruments having two sets of strings, often on different necks or on opposite sides of the body.
- (1) Note. The following subclasses--264 to 289--are intended only for features specific to the instrument named. If the feature is applicable to instruments of two kinds, as a harp and violin, the patent is classified under this class, subclass 290, and indented subclasses.
- 264** Theses have many strings of graduated length stretched on a frame consisting of the body, neck, and pillar. The strings are exposed on both sides to the player's hands.
- 265** Patents for harps where the improvement is in the body only.
- 266** Patents for improvements in the mechanism by which the pitch of the strings is changed one or two semitones.
- 267** Patents showing a few strings stretched along a fretted neck, unless clearly belonging to a subclass below.
- 268** The patents herein relate almost exclusively to the body.
- 269** Instruments having a flexible head and a neck.
- SEE OR SEARCH THIS CLASS, SUB-CLASS:  
193, for metal heads.
- 270** Means to change the quality of the banjo-tones by an attachment or especially by partly-closed air-cavities.
- SEE OR SEARCH THIS CLASS, SUB-CLASS:  
294,
- 271** Banjos having the back partly or wholly closed.

- 272** Banjos in which the head is stretched over two concentric rings.
- 273** A mute or damper for pressing on the head.
- (1) Note. For violin-mutes see this class, subclass 310.
- 274** Improvements not likely to be applicable to any instruments other than those of the violin family and not belonging in subclasses below; also patents involving two specific features.
- 275** Modifications in the body of a violin.
- 276** Changes in the bass-bar.
- 277** Changes in the sound-post.
- 278** Patents covering a combination of the two features.
- 279** Changes in chin-rests.
- 280** Changes in supports for a violin or violoncello.
- 281** Means for holding the player's arm and the violin in proper position.
- 282** Modifications in the construction of violin-bows.
- 283** Devices for guiding the bow in proper relation to the strings.
- 284** Strings stretched over a sounding-board to be struck by hammers in the player's hands.
- 285** Strings stretched over a sounding-board in position to be picked. The strings are often divided into melody-strings and accompaniment-strings, the former sometimes lying over a finger-board.
- (1) Note. For details see this class, subclass 290, and indented subclasses.
- 286** Instruments, usually of the zither type, in which strings are sounded in chord groups, specifically by multiple picks or hammers fixed on a bar and operating simultaneously.
- 287** The dampers mute all strings except those needed for the desired chord. This subclass covers the original "auto-harp".
- 288** These dampers may be operated by hand or by a tune-sheet.
- 289** The plate has holes through which a pick strikes strings that furnish a chord.
- 290** Includes features not practically limited to a single one of the well-known types of stringed instruments in the subclasses above.
- 291** Hollow resonance-bodies for instruments having a neck.
- (1) Note. For bodies special to any one type of instrument see the subclass relating to such instrument.
- 292** Bodies of metal.
- 293** Patents covering the construction of the neck or its connection or inclination to the body.
- 294** Devices for changing the quality of tone of an instrument, as air-cavities, extra sounding-boards, sympathetically-vibrating parts, or small membranes.
- (1) Note. For harmonic dampers see this class, subclass 234.
- 295** Extra strings inside or outside of the body.
- 296** The string sets a diaphragm in vibration. A horn is usually shown.
- 297** Improvements in the string and the means for fastening it.
- (1) Note. In this and the next six subclasses there are many devices for correcting the lengths of strings or tuning them or changing the pressure on the bridge.
- 298** These usually hold the end of the string and a separate tailpiece is not necessary.
- 299** Both a bridge and a tailpiece are used.
- 300** Tailpieces specially adapted to a banjo.

<b>301</b>	Tailpieces specially adapted to a mandolin.	SEE OR SEARCH THIS CLASS, SUB-CLASS:
<b>302</b>	Tailpieces specially adapted to a violin.	443,
<b>303</b>	Devices for winding up the surplus length of string.	<b>318</b> Clamps to shorten all the strings of a guitar or to perform an equivalent operation on other instruments.
<b>304</b>	Patents mostly for simple tuning-pegs, sometimes with means for gripping the string.	<b>319</b> Devices held by the player to stop one or more strings, as on the Hawaiian guitar.
<b>305</b>	Means for holding the peg more tightly than usual.	<b>320</b> Miscellaneous devices for picking, plucking, or pulling strings.
<b>306</b>	Tuning devices having a worm-gear. Sometimes called "machine head" or "patent head".	(1) Note. This subclass and the next two subclasses deal with devices for "playing" or exciting the strings. Very similar devices are found in subclasses 8, 258, 404, and 409 of this class.
<b>307</b>	Bridges not limited to the following subclasses.	
<b>308</b>	Bridges specially adapted to a banjo-head.	
<b>309</b>	Bridges specially adapted to a violin.	<b>321</b> All the picks are reciprocated at once.
<b>310</b>	Devices to be applied to violin-bridges; sordines.	<b>322</b> Simple picks held by the player.
<b>311</b>	The mute is attached to the violin and can be readily shifted into operative position.	<b>323</b> Patents for simple actions adapted to a zither and usually downstriking. The instrument is often called a "keyed zither".
<b>312</b>	Unusual tunings or arrangement of chord groups, particularly in zithers.	(1) Note. For electrically operated hammers, see this class, subclass 246.
<b>313</b>	Device for producing amplitude modulation.	SEE OR SEARCH THIS CLASS, SUB-CLASS:
<b>314</b>	Includes the structure of the finger-board, markings on it, frets, and nuts.	237, 238 and 240.
<b>315</b>	Devices to shorten or stop a string at proper points, as a guitar player does with his finger.	<b>324</b> To produce a vibrato or tremolo effect.
	SEE OR SEARCH THIS CLASS, SUB-CLASS:	(1) Note. For hand-hammers see this class, subclass 284.
	326,	<b>325</b> For violins or zithers.
<b>316</b>	Devices to sharp or flat a note, so as to change the key.	(1) Note. For ordinary violin-bows see this class, subclass 282.
	SEE OR SEARCH THIS CLASS, SUB-CLASS:	(2) Note. For automatic violins see this class, subclasses 10 and 11.
	266,	<b>326</b> The keys operate fretting or fingering means, so that only a few strings are needed. The complete instrument is usually called a "piano-violin".
<b>317</b>	Devices to finger several strings at once, so that a chord may be produced.	

- (1) Note. For instruments having many open strings see this class, subclasses 256 and 257.
- 327** Devices for supporting or positioning guitars, etc., during playing.
- SEE OR SEARCH THIS CLASS, SUB-CLASS:  
278, and 280.
- 328** Means to support the player's hand in proper relation to the instrument.
- SEE OR SEARCH THIS CLASS, SUB-CLASS:  
469,
- 329** Devices attached to an instrument to hold an article, as a pick or a cake of rosin.
- 330** Miscellaneous wind instruments and some details not elsewhere classifiable; also combinations of pipes and reeds.
- (1) Note. The patents of this group may be classed as pipe organs, reed organs, minor reed instruments, orchestral wood winds, and brasses. The first two have many features in common; but they differ so much in size and consequently in details that a parallel classification has been made. Search should ordinarily be made in the proper subclasses of both types and sometimes in "Automatics". Wind-supply devices and pressure-regulators are mostly classed in Class 60, Power Plants, subclass 60, and Class 417, Pumps.
- 331** Patents covering the whole organization or several details or features not elsewhere classifiable.
- 332** Pipe-organ actions not belonging to a specific subclass.
- (1) Note. The speaking of an organ-pipe is usually controlled by the joint operation of devices actuated or controlled, respectively, by a key and a stop. These devices (excluding the keys) are collectively known as the "action". These actions and the corresponding wind-chests are of three types: (1) the older, in which the top of the wind-chest has as many grooves with pallets to control them as there are keys and as many perforated slides crossing the grooves as there are speaking-stops; (2) the type in which there are as many stop-chambers as stops, each carrying a series or "register" of pipes and each controlled by a valve or "ventil", every pipe having its own valve controlled by a key, and (3) the type in which all the pipes stand on a common or "universal" wind-chest and each pipe has its own valve, which is jointly controlled by a key and a draw-stop. In all three types the controlling means may be mechanical, electrical, pneumatic, or electropneumatic. For details of such means see this class, subclass 335, and following subclasses. Patents for combinations of the first type are in this subclass.
- 333** Combinations belonging to type 2 of the Note above.
- 334** Combinations belonging to type 3 of the above Note.
- 335** The invention is essentially embodied in one pneumatic and valve.
- 336** A diaphragm serves as a valve.
- 337** Includes patents for complete organizations and for electric details; also inertia-controlled circuit-closers.
- SEE OR SEARCH THIS CLASS, SUB-CLASS:  
341,
- 338** Includes organizations in which electromagnetic valves control pneumatics; also pneumato-electric actions in which pneumatics control switches in the circuits of electromagnets.
- 339** Includes units or details of such actions.
- 340** Pneumatic means for coupling parts of an organ.

- 341** Electric means for coupling parts of an organ.
- (1) Note. Means for coupling two keyboards together are in this class, subclass 424. A simple type of rock-shaft for octave-couplers is common in reed-organs. (See particularly subclass 373). In pneumatic and electric organ-actions there is no sharp line of distinction between couplers and stop-actions, and in some modern constructions the old nomenclature is inapt.
- (2) Note. See this class, subclasses 1.08, 235, 337, and 338.
- 342** Details of the pallet or other key-operated valve.
- SEE OR SEARCH THIS CLASS, SUB-CLASS:  
368,
- 343** Details of the draw-stops or stop-keys, etc.
- (1) Note. For the complete stop-action search this class, subclasses 331, 332, 333, and 334.
- 344** A single pedal or button brings on a plurality of stops selected by the organ builder.
- 345** A single pedal or button brings on a plurality of stops selected by the player.
- (1) Note. The last two subclasses include organs of all three types described above and actions of the several varieties, also crescendo and sforzando devices.
- 346** Patents relating to swell-shutters and means for operating them.
- 347** The shutters are operated or controlled by an electropneumatic action.
- 348** A vibrating valve produces an irregularity in the flow of air and so in loudness of the sound.
- (1) Note. Compare this class, subclass 374.
- 349** The improvement is embodied in one individual pipe.
- 350** The improvement is embodied in one individual reed-pipe, which usually has a beating-reed.
- 351** Patents for the general construction of a reed-organ. Familiar trade-names are "harmonium, melodeon, cabinet-organ". The reeds are usually free.
- (1) Note. While most of these constructions are obsolete, these patents should be searched for features or details not clearly found in the subclasses below.
- 352** Patents for features of the case.
- 353** In these patents there is some modification of the case around the pedals.
- (1) Note. For other organ-pedals see this class, subclass 357.
- (2) Note. For mouse-guards see this class, subclass 233.
- 354** Collapsible or "suitcase" organs.
- 355** Includes pumpers and sometimes electric motors.
- SEE OR SEARCH THIS CLASS, SUB-CLASS:  
70,
- 356** Instruments involving both exhaust and pressure mechanisms.
- 357** Includes pedals and connections to the bellows.
- SEE OR SEARCH THIS CLASS, SUB-CLASS:  
353, if a modification of the case is involved.
- 358** For the use of children.
- SEE OR SEARCH THIS CLASS, SUB-CLASS:  
230, 231 and 232.
- 359** Includes parts between the pumpers and the actions.



SEE OR SEARCH CLASS: 417, Pumps, subclasses 279+ for pumps having condition responsive control of the fluid handled by the pump.		(1) Note. Compare this class, subclass 348.
<b>360</b>	Boards in which the reed-cells are formed.	<b>375</b> Includes imitation trumpets, jews'-harps, and reed-horns of variable pitch.
<b>361</b>	Tubes each communicating with one or a very few reed-cells.	(1) Note. For accurate tuning means see this class, subclass 350.
<b>362</b>	Chambers each communicating with many cells.	(2) Note. For ordinary fish-horns or dinner-horns see Class 116, Signals and Indicators, subclasses 137 and 140.
<b>363</b>	Patents where the improvement is in the reed alone.	(3) Note. For artificial larynxes see Class 623, Prosthesis (i.e., Artificial Body Members) Parts Thereof or Aids and Accessories Therefor, subclass 9 for larynxes.
<b>364</b>	Means for tuning the reed are included.	
<b>365</b>	Modifications in the parts of the action operated or controlled by the keys; devices to start the tongue in prompt vibration.	<b>376</b> Wind is supplied by a hand-operated bellows and the reeds are controlled by valves and keys. Some forms are called "concertinas".
<b>366</b>	Actions connected to a pedal-keyboard.	SEE OR SEARCH THIS CLASS, SUB-CLASS: 168, 255 and 340.
<b>367</b>	Patents including a pneumatic in the key action.	
<b>368</b>	Key-operated valves.	<b>377</b> Mouth-blown instruments usually sounding chords and rarely having keys.
	SEE OR SEARCH THIS CLASS, SUB-CLASS: 342,	<b>378</b> A resonance tube or chamber is added.
<b>369</b>	Patents relating to draw-stops and to the mutes and other parts of the action operated by the stops.	<b>379</b> Devices to support a harmonica on another instrument or on the player's body.
<b>370</b>	Means to operate several stops in combination.	<b>380</b> Includes patents for features that are readily applicable to various instruments.
<b>371</b>	Devices to produce the "celeste" effect.	<b>381</b> Instruments having two tubes to be blown and fingered simultaneously.
<b>372</b>	Mute, draw-stop, or shutters operated by knee or foot lever or bellows.	<b>382</b> Includes features specially applicable to clarinets.
<b>373</b>	Devices to cause two notes, usually an octave apart, to sound when one key is depressed.	<b>383</b> Single-reed mouthpieces and elements thereof.
	SEE OR SEARCH THIS CLASS, SUB-CLASS: 168, 235 and 340.	<b>384</b> Features pertaining to flutes and similar instruments that give the octave on overblowing.
<b>374</b>	Devices to produce interruptions in the flow of sound, usually of the rotating-fan type.	<b>385</b> Details not applicable to other instruments.
		<b>386</b> Devices for changing the key or the pitch; transposers.

- 387 This title covers the band instruments commonly called “brasses”, whatever their specific names may be. This subclass includes combinations and features not classifiable below.
- 388 Those instruments, of which the cornet is typical, usually having three piston-valves.
- 389 Cornets, etc., having four or more valves.
- 390 The valves rotate.
- 391 The valves have a combined rotating and sliding movement or the engaging surfaces of the valve and its seat are planes.
- 392 Details of the piston-valve.
- 393 Each valve controls two tubes of different length, often symmetrically placed, whereby the difference in timbre between open and valve tones is diminished.
- 394 Means to change the key or pitch.
- 395 Instruments in which the changes in length of the vibrating air column depend on a slide.
- 396 Means to change the key or pitch specially adapted to a trombone.
- 397 Water-keys and analogous devices.
- 398 Cornet and similar mouthpieces, usually cup-shaped.
- 399 Adjustable in length or internal shape or having interchangeable parts.
- 400 Cornet-mutes to enable the player to produce a softer tone than usual.
- 401 Devices by which a tremolo effect may be produced.
- 402 Miscellaneous constructions and features.
- (1) Note. This group is intended to take all solid sounding-bodies except strings. They are sometimes called “autophones” or “percussion instruments”. When used as attachments to a piano or organ, they are to be searched for in this class, subclasses 2, 3, 170, and 171.
- 403 Bars supported at nodal points to vibrate transversely and means for supporting them; also some end-supported bars and some resonators. Hand-strikers are used.
- 404 Bars furnishing the notes of a scale and strikers therefor. Called “xylophones, toy pianos, pianos, pianos without strings, chimes,” etc.
- SEE OR SEARCH CLASS:  
116, Signals and Indicators, appropriate subclasses for mechanically operated signals.  
340, Communications: Electrical, subclasses 384.1+ for electrically operated audible signals.
- 405 The bars are vibrated by electromagnets.
- 406 A musical instrument usually including a plurality of bells and strikers or equivalents.
- SEE OR SEARCH CLASS:  
116, Signals and Indicators, for single bells.
- 407 The strikers are actuated or controlled by electromagnets.
- SEE OR SEARCH CLASS:  
340, Communications: Electrical, subclasses 392.1+ for an electrically operated signal bell.
- 408 Short bars fixed at one end like the teeth of a comb and vibrated by a pick. Most familiar in the Swiss music-box.
- (1) Note. See this class, subclass 94, and indented subclasses.
- 409 A musical instrument comprising tuning-forks and their strikers.
- (1) Note. See this class, subclass 457 for single forks.
- 410 Hollow bodies serving as resonators for a bar, fork, etc.

SEE OR SEARCH CLASS: 181, Acoustics, for pertinent subclass(es) as determined by schedule review.		423	Miscellaneous patents involving several features or features not specifically classified.
411	Miscellaneous drums not classifiable in the subclasses indented hereunder.	424	Keyboards like those of a pipe-organ and couplers therefor.  (1) Note. Continue the search in subclass 1.17 of this class.
412	Those collapsible for convenience of transportation.	425	Keys of one set operate, respectively, keys of another set.
413	Means for tightening cords that stretch the heads.	426	The keys of the first set are foot-operated.
414	Unusual materials for the head.	427	All or some of the keys have two places for fingering; stepped keys.
415	Miscellaneous features of construction.	428	Successive keys furnish notes a whole tone apart; Janko keyboards, etc.
416	The invention is in the material used.	429	The front ends of the keys lie along a curved line.
417	The snares are inside the head.	430	Changes in the part of the case which supports the key-frame.
418	Shallow drums with a single head.	431	The bottom and keys fold into the case.
419	Kettledrums and tuning means therefor.	432	Means to vary the striking-point in a horizontal piano or to level the key-frame.
420	Small cheap drums used as toys.	433	The improvement can be embodied in a single key.
421	Devices for supporting drums.  (1) Note. For attachments to a drum for supporting bells, cymbals, etc., see Class 248, Supports, subclass 200, and indented subclasses.	434	Improvements in both fulcrum and guide.
422.1	<b>Drum and cymbal beaters:</b> This subclass is indented under subclass 1. Subject matter which are foot-operated bass drum beaters.	435	Improvements in the fulcrum.
422.2	<b>Combined:</b> This subclass is indented under subclass 422.1. Subject matter combined with cymbal beaters.	436	Improvements in the guiding devices.
422.3	<b>Hi-hat:</b> This subclass is indented under subclass 422.1. Subject matter which are cymbal beater (e.g., Hi-Hat).	SEE OR SEARCH THIS CLASS, SUBCLASS: 438,	
422.4	<b>Drumsticks:</b> This subclass is indented under subclass 422.1. Subject matter which are drumsticks.	437	Improvements in the ivory or other covering.
		438	Various processes of manufacture.
		439	Means to adjust the depth or other characteristics of the touch.

- SEE OR SEARCH THIS CLASS, SUB-CLASS:  
435, and 467.
- 440** Means to adjust the resistance of the keys.
- 441** Means to hold down a depressed key, so as to sustain the sound, generally in organs.
- (1) Note. For devices to hold all the keys see this class, subclass 167.
- 442** Means for selecting out of the twelve keys of an octave those needed for any diatomic scale.
- 443** Means whereby a single key or button sounds a chord.
- SEE OR SEARCH THIS CLASS, SUB-CLASS:  
317,
- 444** Means whereby a single pedal sounds a chord.
- 445** Devices whereby each sound produced is systematically different in pitch from that normally associated with the key struck. Includes pneumatic or electric devices.
- (1) Note. See this class, subclass 442.
- 446** A shiftable keyboard superposed on the ordinary one.
- 447** The keyboard is shifted relatively to the action.
- 448** Parts between the keyboard and sounders are shifted.
- 449** The sounders are shifted.
- 450** Devices for emphasizing the highest or lowest note of a chord; "melody attachment".
- 451** Pianos or organs furnishing more than twelve notes to the octave or tuned to give a scale different from the equally-tempered scale of the piano; special keyboards and connections therefrom; quarter-tone instruments; enharmonic instruments.
- 452** Patents in which the novelty resides in a substitution of material.
- (1) Note. See this class, subclasses 193 and 291.
- 453** Devices used in connection with a musical instrument, but not necessary to the production of music. Includes testing devices.
- SEE OR SEARCH THIS CLASS, SUB-CLASS:  
169, for indicators related to a self playing instrument.
- SEE OR SEARCH CLASS:  
248, Supports, subclass 396 and 397 for a piano stool or bench having a tiltable support surface which may remain horizontal while the occupant is playing a piano manually, but which may be tilted forwardly to support the occupant in a position to facilitate pumping an organ bellows or player piano mechanism with his feet and subclasses 441.1+ for an easel, book or music score holder.
- 454** Miscellaneous devices.
- (1) Note. This subclass and the subclasses indented under it include devices temporarily used in tuning, usually not connected to the instrument to be tuned. Some of them furnish a note of standard pitch, others are merely tools.
- 455** Strings, usually on a graduated bar; monochord; sonometer.
- 456** Pitch-pipes, reeds, etc., furnishing one or more notes of definite pitch.
- 457** Tuning-forks.
- SEE OR SEARCH THIS CLASS, SUB-CLASS:  
409, for forks mounted to form a musical instrument.
- 458** Machines for both shaping and blowing reeds; also some hand tools.
- 459** Piano-tuners' wrenches.

- 460** Needles and carriers for picking felt hammer-heads.
- 461** Devices for recording the movement of keys of a keyboard.
- SEE OR SEARCH CLASS:  
234, Selective Cutting (e.g., Punching), subclasses 49+, if the record is made by selectively perforating a moving sheet; subclasses 109+ and 123+ for a keyboard controlled selective cutting device in general.
- 462** These devices involve electric circuits.
- 463** Means for applying expression lines or marks to a record-sheet.
- 464** Devices for producing light or color effects combined with an instrument for producing music.
- SEE OR SEARCH CLASS:  
239, Fluid Sprinkling, Spraying, and Diffusing, subclass 18 for ornamental fountains having means to light or illuminate the fountain.  
315, Electric Lamp and Discharge Devices: Systems, appropriate subclasses, for electric systems for supplying electric energy to electric lamps.  
446, Amusement Devices: Toys, subclass 200 for a figure toy which moves in time with a musical instrument; and subclasses 202+ for other mouth-piece-actuated toys.
- 465** Devices to aid students in learning to play an instrument.
- SEE OR SEARCH THIS CLASS, SUB-CLASS:  
281,
- 466** Devices to aid in voice-training.
- 467** Includes practice-keyboards; "claviers".
- SEE OR SEARCH THIS CLASS, SUB-CLASS:  
440,
- SEE OR SEARCH CLASS:  
434, Education and Demonstration, subclasses 176, 202 and 227+ for other teaching devices having key-boards.  
482, Exercise Devices, particularly subclasses 44+ for hand, wrist, or finger exercise apparatus in general.  
601, Surgery: Kinesitherapy, subclass 40.
- 468** Devices attached to the player's hand or body.
- 469** A rail fixed to the piano-case to position the player's arm.
- SEE OR SEARCH THIS CLASS, SUB-CLASS:  
328,
- 470** Devices for use in teaching music, some with sounders; charts; indicators.
- SEE OR SEARCH CLASS:  
434, Education and Demonstration, for other teaching devices.
- 471** Various kinds of charts.
- 472** Devices adapted to stand vertically and others of analogous construction and use.
- (1) Note. For devices in which a note, etc., is caused to appear on the staff upon pressing a key see this class, subclass 477.
- 473** Devices having a slide for illustrating change of key.
- 474** Similar devices having a dial.
- 475** Various devices useful in writing music, as from a record or for a transposing instrument.
- 476** Blocks or cards having musical characters.
- SEE OR SEARCH CLASS:  
273, Amusement Devices: Games, subclasses 292+ for card or tile games which may have an educational benefit, and see especially subclass 301 thereof.  
434, Education and Demonstration, subclasses 208 and 403 for other educational blocks or cards.

- 446, Amusement Devices: Toys, sub-classes 85+ for toy blocks; and sub-class 147 for toy cards.
- 477 Miscellaneous visual devices responding to movements of keys or directing their movement or showing note relationships.
- 478 To be used on a keyboard.
- 479 A card or board bearing indicia to register with the keys of the instrument-keyboard.
- 480 The card has a slide to indicate various major or minor keys.
- 481 A plurality of cards, each for a single key.
- 482 The card is shifted along the keyboard for transposition.
- 483.1 **Tune sheets:**  
This subclass is indented under subclass 477. Subject matter having sheets bearing the music and located with special reference to the keys or sounders.
- 483.2 **Notation systems:**  
This subclass is indented under subclass 483.1. Subject matter including notation systems.
- 484 Devices for indicating the tempo or rhythm.
- 485 The music-sheet has marks showing what finger is to be used in producing a note.
- 486 Patents showing constructions not clearly belonging in one of the following subclasses or showing features applicable to various types of leaf-turners.
- (1) Note. Leaf-turners are devices to be attached to a music-stand or to the music-desk of a piano to enable a player to turn one or more leaves of music from right to left. In some cases the player releases a source of power, in others he furnishes the power. In either case he may use his hand, knee, or foot, and the terms "releaser" and "finger-piece" are used generically herein to include also knee-levers and foot-levers. Often a pedal is connected to operate a finger-key. Usually each leaf is attached by clips to one or two arms extending from a solid or tubular shaft pivoted near the line of fold of the music-sheets or the line of the back of a bound book, said arms extending along the top or bottom edge of the leaf or along both. This classification is based, first, on the immediate source of the power that turns the leaf-motor, gravity, spring, or hand--and, second, on whether there is a plurality of parts or a single one of each kind. The parts considered are only those of turning a leaf from right to left. In many instances there are keys or pedals to return the leaves from left to right. These are disregarded in the classification.
- (2) Note. Patents for some features of construction that are not suggested by these titles are cross-referenced into this subclass.
- SEE OR SEARCH CLASS:
- 40, Card, Picture, or Sign Exhibiting, subclasses 524+, 529+ for means to feed a continuous sheet of music and 530+ for means to turn the leaves of a book.
- 248, Supports, subclasses 441.1+ for an easel, book or music score holder.
- 487 In these generally a spring-motor is released repeatedly to turn leaf-holding arms forward and back. The motor must be rewound from time to time. Some patents show an electric motor.
- 488 The leaves are moved by the weight of some part.
- 489 The arms are started by hand and their movement continued by springs. Accessories, Leaf-Turners, Spring-Operated Arms. Each arm has a spring tending to carry it from right to left. The arm is held by a latch, catch, detent, or dog. This may be liberated by a releaser, trigger, key, or finger-piece.
- 490 There is a latch for each arm.
- 491 The latches are fixed and the arms are moved slightly to release them.
- 492 There is a releaser, key, or pedal for each arm.

- 493** Both latches and releasers are pivoted.
- 494** Each latch is integral with its releaser and is pivoted.
- 495** One latch holds all the arms, so only one releaser is needed.
- 496** The latch is fixed. Commonly it holds directly the outermost arm.
- 497** The latch slides to release the arms successively.
- 498** The latch has means to catch the following arm before or as it releases the front one.
- 499** The latch is operated by a puff of air.
- 500** There is only one arm, and this is spring-operated.
- (1) Note. See this class, subclasses 516 and 517.
- 501** The two functions are served by one integral piece.
- 502** The player supplies the power to turn the arms through finger-pieces and connections called "actuators".
- 503** One for each arm.
- 504** One for each arm.
- 505** The actuator is pivoted. Often it is a gear or segmental gear.
- 506** Each finger-piece is integral with its actuator. The latter is often toothed.
- 507** One finger-piece operates successively all the actuators and arms. Accessories, Leaf-turners, Player-operated arms, Single actuator. A single actuator operates all the arms.
- 508** The actuator moves on step by step to shift the successive arms.
- 509** The arms and actuator are pivoted on different axes.
- 510** The actuator has a segmental gear.
- 511** The actuator slides.
- 512** It includes a segmental rack.
- 513** The actuator after shifting one arm returns for the next one.
- 514** The arms and actuator are pivoted on different axes.
- 515** The actuator slides.
- 516** Devices for turning a single leaf or sometimes a sheet around its center.
- 517** There are no arms with clips, but a single actuator engages successively leaves or attachments on them.
- 518** Devices for partly raising a leaf, so that the bar or finger may pass under it.
- 519** The leaf is lifted by a suction-head.
- 520** The leaves are notched or otherwise modified to cooperate with the mechanism.
- 521** The leaves carry iron disks to be attracted by magnets on the transfer-bar.
- 600** **Electrical musical tone generation:**  
This subclass is indented under subclass 1. Subject matter including means for generating or modifying electric currents or potentials to produce varying electric currents or potentials in combination with, or intended for converting the varying electric currents or potentials into sound vibrations for the production of musical tones.
- (1) Note. For devices which generate or modify an electric current or potential so as to produce a particular waveform, see the search notes below.
- SEE OR SEARCH CLASS:  
307, Electrical Transmission or Interconnection Systems, subclasses 106+ for waveform or waveshape determinative circuits.

- 310, Electrical Generator or Motor Structure, appropriate subclasses for electrical generators, particularly subclass 111 for generated wave modifications; subclass 160 for rotary frequency converters, and subclasses 166+ for induction and variable reluctance type A. C. generators.
- 322, Electricity: Single Generator Systems, appropriate subclasses for miscellaneous generator systems for generating electric currents and potentials.
- 327, Miscellaneous Active Electrical Non-linear Devices, Circuits, and Systems, appropriate subclasses for miscellaneous nonlinear circuits using active devices such as tubes or transistors.
- 331, Oscillators, appropriate subclasses for electrical oscillator systems, per se.
- 333, Wave Transmission Lines and Networks, subclass 20 for electric wave-shaping networks of the passive type and subclass 167 for electric wave filters.
- 336, Inductor Devices, appropriate subclasses for inductive reactors and transformers which are provided with fixed or movable elements (e.g., having a moving armature to modify the impedance of an inductive reactor).
- 338, Electrical Resistors, subclass 69 for mechanically variable resistors actuated by musical instrument playing keys.
- 363, Electric Power Conversion Systems, appropriate subclasses for electric power conversion systems; particularly subclasses 13+ for rectifying and inverting systems, and subclasses 157+ for frequency conversion systems.
- 381, Electrical Audio Signal Processing Systems and Devices, subclasses 51+ for speech synthesis.
- 704, Data Processing: Speech Signal Processing, Linguistics, Language Translation, and Audio Compression/Decompression, subclasses 258+ for speech synthesis.
- 601 Data storage:**  
This subclass is indented under subclass 600. Subject matter wherein tone characteristic informations such as timbre, envelope, harmonic contents, pitch or etc., are retained and retrievable to produce musical tone.
- 602 Digital memory circuit (e.g., RAM, ROM, etc.):**  
This subclass is indented under subclass 601. Subject matter wherein the tone characteristic information is stored by digital memory circuit in a discrete format (e.g., RAM, ROM, etc.) to produce musical tone.
- (1) Note. This subclass does not provide for generating musical tone based on digital combinational circuit (see this class subclass 647 for digital combinational circuit).
- SEE OR SEARCH CLASS:**
- 324, Electricity: Measuring and Testing, subclasses 111 and 113 for storing or recording voltage or current.
- 360, Dynamic Magnetic Information Storage and Retrieval, subclass 32 for prior analog to digital conversion; subclasses 55+ for magnetic recording and producing; subclass 131 for recording medium, per se.
- 365, Static Information Storage and Retrieval, appropriate subclasses for memory, per se, and subclass 48 for magnetic analog storage.
- 369, Dynamic Information Storage and Retrieval, subclass 63 for sound reproduction for toy or novelty; subclass 86 for acoustic signal storage and retrieval; subclasses 272+ for storage medium, per se.
- 704, Data Processing: Speech Signal Processing, Linguistics, Language Translation, and Audio Compression/Decompression, subclasses 206+ for storage of pitch and formats.
- SEE OR SEARCH CLASS:**
- 360, Dynamic Magnetic Information Storage and Retrieval, subclass 32 for prior analog to digital conversion before storage; subclass 39 for digital storage; subclasses 55+ for magnetic recording and retrieval; subclasses 131+ for storage medium, per se.
- 365, Static Information Storage and Retrieval, appropriate subclasses, for specific memory systems, per se.



- 711, Electrical Computers and Digital Processing Systems: Memory, subclasses 100+ for generic storage accessing and control in digital data processing systems.
- 603 Sampling (e.g., with A/D conversion):**  
This subclass is indented under subclass 602. Subject matter wherein an analog sound is digitized and stored for future retrieval.
- SEE OR SEARCH CLASS:  
341, Coded Data Generation and Conversion, subclasses 122+ for generic A/D conversion with sampling.  
360, Dynamic Magnetic Information Storage or Retrieval, subclass 32 for analog to digital conversion prior to storage.  
700, Data Processing: Generic Control Systems or Specific Applications, subclass 73 for sampled data control systems, per se.
- 604 Waveform memory:**  
This subclass is indented under subclass 602. Subject matter wherein a waveform is digitally stored.
- 605 Read out at different rates:**  
This subclass is indented under subclass 604. Subject matter wherein the waveforms are read out from memory at various rates that correspond to desired pitches.
- SEE OR SEARCH CLASS:  
365, Static Information and Retrieval, subclass 230 for addressing a waveform memory, per se.
- 606 Read out at fixed rate:**  
This subclass is indented under subclass 604. Subject matter wherein the waveforms are read out from memory at a constant rate.
- SEE OR SEARCH THIS CLASS, SUBCLASS:  
605, for read out at different rates.
- 607 Recursive algorithm:**  
This subclass is indented under subclass 604. Subject matter wherein a plural period waveform is achieved by rereading the same waveform from the same memory location.
- SEE OR SEARCH THIS CLASS, SUBCLASS:  
605, for read out at different rates.
- SEE OR SEARCH CLASS:  
700, Data Processing: Generic Control Systems or Specific Applications, subclass 89 for data processing control system with specific algorithm
- 608 Fourier coefficient memory:**  
This subclass is indented under subclass 602. Subject matter wherein storage locations are provided for the Fourier coefficients.
- SEE OR SEARCH THIS CLASS, SUBCLASS:  
602, for digital memory circuit.
- SEE OR SEARCH CLASS:  
708, Electrical Computers: Arithmetic Processing and Calculating, subclasses 403+ and 821 for digital and analog Fourier transforms.
- 609 Note sequence:**  
This subclass is indented under subclass 602. Subject matter wherein a succession of musical notes is sequentially processed by digital memory circuit for performance or comparison.
- SEE OR SEARCH CLASS:  
446, Amusement Devices: Toys, subclass 408 for simulated musical instruments.
- 610 Accompaniment:**  
This subclass is indented under subclass 609. Subject matter wherein the stored sequence is used as a musical support for a voice or melody.
- 611 Rhythm:**  
This subclass is indented under subclass 610. Subject matter wherein the information represents the timing intervals of the musical piece.
- 612 Tempo control:**  
This subclass is indented under subclass 611. Subject matter wherein the rate or speed of rhythm is variable.

- 613 Chords:**  
This subclass is indented under subclass 610. Subject matter wherein the note sequence contains a plurality of notes played simultaneously.
- 614 Reiteration:**  
This subclass is indented under subclass 610. Subject matter wherein the plural tones are repetitively played in sequence.
- 615 Selecting circuits:**  
This subclass is indented under subclass 602. Subject matter comprising a circuit which selects any musical parameter (e.g., pitch, timbre, etc.).
- 616 Fundamental tone detection or extraction:**  
This subclass is indented under subclass 615. Subject matter wherein the fundamental or pitch is detected and used to activate or modify a musical system.
- 617 Multiplexing or scanning:**  
This subclass is indented under subclass 615. Subject matter wherein the selecting circuits are assigned by time division multiplexing or scanning.
- SEE OR SEARCH CLASS:  
340, Communications: Electrical, subclasses 825+ for selective scanning devices.  
370, Multiplex Communications, appropriate subclasses for time division multiplexing, per se.
- 618 Priority or preference circuits:**  
This subclass is indented under subclass 615. Subject matter wherein a plurality of musical notes or keys are selected with a certain note or notes having precedence over others selected; e.g., highest or lowest notes having priority over any other selected.
- SEE OR SEARCH CLASS:  
327, Miscellaneous Active Electrical Non-linear Devices, Circuits, and Systems, subclasses 1+ for signal discriminating, comparing, or selecting.  
340, Communications: Electrical, subclasses 825.5 and 825.51 for lockout or priority circuits.
- 619 Transposition:**  
This subclass is indented under subclass 615. Subject matter wherein a musical piece is written or performed in a key other than the original or given key.
- SEE OR SEARCH CLASS:  
363, Electric Power Conversion Systems, subclasses 157+ for converting a first frequency into a second frequency.
- 620 Stops:**  
This subclass is indented under subclass 615. Subject matter wherein a circuit or system selects a musical voice, tone color, timbre or electrically simulated organ pipe sound.
- 621 Noise reduction (e.g., error prevention):**  
This subclass is indented under subclass 602. Subject matter wherein circuitry is provided to reduce electrical noises, transients or unwanted disturbances.
- SEE OR SEARCH CLASS:  
381, Electrical Audio Signal Processing Systems and Devices, subclasses 71.1+ for acoustical noise or sound cancellation; subclasses 94.1+ for noise or distortion suppression.  
702, Data Processing: Measuring, Calibrating, or Testing, subclasses 191+ for noise removal or suppression, in a measured signal of a data processing measuring system
- 622 Tone synthesis or timbre control:**  
This subclass is indented under subclass 602. Subject matter wherein the harmonic content of a note is controlled or modified.
- SEE OR SEARCH CLASS:  
307, Electrical Transmission or Interconnection Systems, subclasses 106+ for waveform or waveshape determinative systems.  
327, Miscellaneous Active Electrical Non-linear Devices, Circuits, and Systems, subclasses 100+ for miscellaneous converting, shaping, or generating.  
333, Wave Transmission Lines and Networks, subclass 28 for audio tone controls; subclasses 167+ for lumped parameter filters, per se.

- 381, Electrical Audio Signal Processing Systems and Devices, subclasses 101 through 103 for automatic tone control or equalization of an audio signal; subclass 118 for signal processing of musical instruments, per se.
- 708, Electrical Computers: Arithmetic Processing and Calculating, subclasses 300+ for digital filtering by a calculating computer.
- 623 Time varying or dynamic fourier components:**  
This subclass is indented under subclass 622. Subject matter wherein the Fourier components are time varying or dynamic.
- SEE OR SEARCH THIS CLASS, SUBCLASS:  
608, for a constant stored Fourier component.
- 624 Modulation:**  
This subclass is indented under subclass 622. Subject matter wherein tones are synthesized or modified by varying a carrier wave in accordance with a modulation wave.
- SEE OR SEARCH CLASS:  
332, Modulators, subclasses 16+ for phase or frequency modulation; subclasses 31+ for amplitude modulation.  
360, Dynamic Magnetic Information Storage or Retrieval, subclasses 29 through 30 for the frequency modulation of stored data.
- 625 Mixing:**  
This subclass is indented under subclass 622. Subject matter wherein two or more signals are combined to form a composite waveform.
- SEE OR SEARCH CLASS:  
327, Miscellaneous Active Electrical Non-linear Devices, Circuits, and Systems, subclasses 113+ for a miscellaneous frequency mixing circuit.  
369, Dynamic Information Storage or Retrieval, subclass 4 for mixing signals that originate from storage.  
381, Electrical Audio Signal Processing Systems and Devices, subclass 119 for audio system mixers, per se.
- 626 Expression or special effects (e.g., force or velocity responsive, etc.):**  
This subclass is indented under subclass 602. Subject matter for providing an indication of feeling or artistic execution to the musical tones.
- SEE OR SEARCH CLASS:  
73, Measuring and Testing, subclasses 488+ for velocity measuring per se.  
327, Miscellaneous Active Electrical Non-linear Devices, Circuits, and Systems, subclasses 261+ for miscellaneous delay circuits.  
356, Optics: Measuring and Testing, subclass 28 for measuring key switch velocity optically.  
361, Electricity: Electrical Systems and Devices, subclasses 283.1+ for pressure (force) responsive capacitors.
- 627 Envelope shaping (i.e., attack, decay, sustain or release):**  
This subclass is indented under subclass 626. Subject matter for providing or modifying an amplitude contour of an activated tone.
- SEE OR SEARCH CLASS:  
327, Miscellaneous Active Electrical Non-linear Devices, Circuits, and Systems, subclasses 306+ for signal shaping by amplitude control.  
333, Wave Transmission Lines and Networks, appropriate subclasses for networks delay.
- 628 Portamento or glissando:**  
This subclass is indented under subclass 626. Subject matter for producing an audible continuous glide from one tone to a second tone.
- 629 Vibrato or tremolo:**  
This subclass is indented under subclass 626. Subject matter wherein an audio tone is frequency or amplitude modulated with a subaudio frequency.
- SEE OR SEARCH CLASS:  
331, Oscillators, subclass 178 for producing vibrato in the oscillator output frequency.  
332, Modulators, subclasses 16+ for frequency modulation which produces

- vibrato; subclasses 31+ for amplitude modulation which produces tremolo.
- 381, Electrical Audio Signal Processing Systems and Devices, subclass 62 for tremolo or vibrato effects.
- 630 Reverberation:**  
This subclass is indented under subclass 626. Subject matter for providing time delays that simulate a plurality of acoustic reflections of a given tone; e.g., echo.
- SEE OR SEARCH CLASS:  
367, Communications, Electrical: Acoustic Wave Systems and Devices, subclasses 87+ for echo systems, per se.  
381, Electrical Audio Signal Processing Systems and Devices, subclasses 63+ for reverberation.
- 631 Chorus, ensemble, or celeste:**  
This subclass is indented under subclass 626. Subject matter providing for the combining of a slightly detuned tone with the original tone.
- SEE OR SEARCH CLASS:  
381, Electrical Audio Signal Processing Systems and Devices, subclasses 89 through 332 + for rotating speakers that produce a chorus or "Leslie" effect.
- 632 Chiff or percussive transients:**  
This subclass is indented under subclass 626. Subject matter wherein transients are introduced into the initial sounding portion of the envelope to simulate the hiss or noise of an organ pipe.
- 633 Loudness control:**  
This subclass is indented under subclass 626. Subject matter wherein the amplitude or volume of the musical tones may be regulated.
- SEE OR SEARCH CLASS:  
381, Electrical Audio Signal Processing Systems and Devices, subclasses 104+ for amplitude or volume control of an audio signal.
- 634 Accompaniment:**  
This subclass is indented under subclass 602. Subject matter wherein digital data represents a musical support or background.
- 635 Rhythm:**  
This subclass is indented under subclass 634. Subject matter wherein the information represents timing intervals of a musical piece.
- 636 Tempo control:**  
This subclass is indented under subclass 635. Subject matter wherein the rate or speed of rhythm is variable.
- 637 Chords:**  
This subclass is indented under subclass 634. Subject matter wherein the data represents a plurality of musical tones to be played simultaneously.
- 638 Arpeggio:**  
This subclass is indented under subclass 634. Subject matter wherein the data represents chord tones to be played in sequence one at a time.
- 639 Photoelectric:**  
This subclass is indented under subclass 601. Subject matter including optical and electrical means for storing data representative of the musical tones.
- SEE OR SEARCH CLASS:  
250, Radiant Energy, subclasses 200+ for photocell systems.  
361, Electricity: Electrical Systems and Devices, subclasses 173+ for the activation of solenoids from a condition responsive photosensor.  
362, Illumination, subclass 295 for a switch which acts in response to a light source or modifier which ultimately controls, for example, an oscillator; subclass 802 for light activated switches, per se.  
365, Static Information Storage and Retrieval, subclass 112 for generic photoelectric memory systems.
- 640 Variable speed:**  
This subclass is indented under subclass 639. Subject matter wherein different pitches are obtained by varying the rotational speed of a diffraction or grating disk.

## SEE OR SEARCH CLASS:

- 250, Radiant Energy, subclasses 237+ for pre-photocell grating systems.
- 359, Optics: Systems (Including Communication) and Elements, subclasses 558+ for optical diffraction devices.

**641 Magnetic:**

This subclass is indented under subclass 601. Subject matter including magnetic and electrical means for storing data representative of the musical tones.

## SEE OR SEARCH CLASS:

- 360, Dynamic Magnetic Information Storage or Retrieval, subclasses 55+ for general features pertaining to magnetic storage of information; subclasses 131+ for the storage medium, per se.
- 365, Static Information Storage and Retrieval, subclass 48 for analog storage on magnetic medium.

**642 Tape:**

This subclass is indented under subclass 641. Subject matter wherein the magnetic storage medium is in a tape form.

**643 Capacitive:**

This subclass is indented under subclass 601. Subject matter including capacitive means for storing data representative of the musical tones.

## SEE OR SEARCH CLASS:

- 361, Electricity: Electrical Systems and Devices, subclasses 271+ for capacitors, per se.
- 365, Static Information Storage and Retrieval, subclass 102 for capacitive type read only memories.

**644 Constructional details:**

This subclass is indented under subclass 601. Subject matter including mechanical features of the musical instrument.

**645 MIDI (musical instrument digital interface):**

This subclass is indented under subclass 601. Subject matter including an interface between an instrument and a digital processing system.

## SEE OR SEARCH CLASS:

- 700, Data Processing: Generic Control Systems or Specific Applications, subclasses 83 through 85 for generic data processing with operator control interface.

**646 Fret control:**

This subclass is indented under subclass 601. Subject matter wherein the stored data is controlled via a stringed musical instrument fingerboard; e.g., switches on a guitar fingerboard.

**647 Digital combinational circuit:**

This subclass is indented under subclass 600. Subject matter wherein binary inputs are provided to digital combinational circuit to produce musical tone.

- (1) Note. Digital combinational circuit performs some unique logic function such as decoding, encoding, multiplexing, comparison or an arithmetic operation with binary numbers.
- (2) Note. This subclass does not provide for stored tone characteristic information to produce musical tone (See this class, subclass 602 for digital memory circuit).

## SEE OR SEARCH CLASS:

- 331, Oscillators, appropriate subclasses for oscillators used to provided a digital signal.

**648 With frequency multiplication or division:**

This subclass is indented under subclass 647. Subject matter wherein the discrete notes of a complete musical scale are obtained by varying the oscillator output frequency.

## SEE OR SEARCH CLASS:

- 327, Miscellaneous Active Electrical Non-linear Devices, Circuits, and Systems, subclasses 113+ for miscellaneous frequency multiplication or division.
- 331, Oscillators, appropriate subclasses for oscillators used to provide a digital signal.
- 363, Electric Power Conversion Systems, subclass 157 for converting frequencies.

- 377, Electrical Pulse Counters, Pulse Dividers, or Shift Registers: Circuits and Systems, subclasses 118+ for pulse frequency dividing chains; subclass 47 for pulse multiplication or division.
- 649 Note sequence:**  
This subclass is indented under subclass 647. Subject matter wherein a succession of musical notes is sequentially processed by digital combinational circuit for performance or comparison.
- SEE OR SEARCH THIS CLASS, SUBCLASS:  
609+, for note sequence with digital data storage.
- SEE OR SEARCH CLASS:  
377, Electrical Pulse Counters, Pulse Dividers, or Shift Registers: Circuits and Systems, subclass 26 for applications of pulse dividers utilizing memory.
- 650 Accompaniment (e.g., chords, etc.):**  
This subclass is indented under subclass 649. Subject matter wherein the stored sequence is used as a musical support for a voice or melody.
- 651 Rhythm:**  
This subclass is indented under subclass 650. Subject matter wherein the information represents timing intervals of the musical piece.
- 652 Tempo control:**  
This subclass is indented under subclass 651. Subject matter wherein the rate or speed of rhythm is variable.
- 653 Selecting circuits:**  
This subclass is indented under subclass 647. Subject matter comprising a circuit which selects musical parameter (e.g., pitch, timbre, etc.).
- SEE OR SEARCH THIS CLASS, SUBCLASS:  
615+, for selective circuit with digital storage.
- SEE OR SEARCH CLASS:  
200, Electricity: Circuit Makers and Breakers, appropriate subclasses for selecting circuits in conjunction with musical instruments.  
307, Electrical Transmission or Interconnection Systems, subclasses 112+ for switching systems.
- 654 Fundamental tone detection or extraction:**  
This subclass is indented under subclass 653. Subject matter wherein the fundamental or pitch is detected and used to activate or modify a musical system.
- SEE OR SEARCH THIS CLASS, SUBCLASS:  
616+, for fundamental tone detection or extraction with digital storage.
- 655 Multiplexing or scanning:**  
This subclass is indented under subclass 653. Subject matter wherein the selecting circuits are assigned by time division multiplexing or scanning.
- SEE OR SEARCH THIS CLASS, SUBCLASS:  
617+, for multiplexing or scanning with digital storage.
- 656 Priority or preference circuits:**  
This subclass is indented under subclass 653. Subject matter wherein a plurality of musical notes or keys are selected with a certain note or notes having precedence over others; e.g., highest or lowest notes having priority.
- SEE OR SEARCH THIS CLASS, SUBCLASS:  
618+, for priority or preference circuits with digital storage.
- 657 Transposition:**  
This subclass is indented under subclass 653. Subject matter wherein a musical piece is written or performed in a key other than the original or given key.
- SEE OR SEARCH THIS CLASS, SUBCLASS:  
445, for transposition structure.  
619, for transposition with digital storage.

**658 Force or velocity responsive:**

This subclass is indented under subclass 653. Subject matter wherein the selecting circuit is responsive to the applied pressure force or velocity.

SEE OR SEARCH THIS CLASS, SUB-CLASS:

626+, for force or velocity responsive with digital storage.

**659 Tone synthesis or timbre control:**

This subclass is indented under subclass 647. Subject matter wherein harmonic content of a note is controlled or modified.

SEE OR SEARCH THIS CLASS, SUB-CLASS:

622+, for tone synthesis or timbre control with digital storage.

**660 Mixing:**

This subclass is indented under subclass 659. Subject matter wherein two or more signals are combined to form a composite waveform.

SEE OR SEARCH THIS CLASS, SUB-CLASS:

625, for mixing with digital storage.

**661 Filtering:**

This subclass is indented under subclass 659. Subject matter wherein a desired waveform is obtained by removing one or more partials or harmonics.

SEE OR SEARCH CLASS:

307, Electrical Transmission or Interconnection Systems, subclasses 105+ for harmonic filter or neutralizer.

333, Wave Transmission Lines and Networks, subclass 186 for electromechanical filters using lumped parameters.

708, Electrical Computers: Arithmetic Processing and Calculating, subclasses 300+ for digital filtering by a calculating computer.

**662 Expression or special effects:**

This subclass is indented under subclass 647. Subject matter for providing an indication of feeling or artistic execution to the musical tones.

SEE OR SEARCH THIS CLASS, SUB-CLASS:

626, for expression or special effects with digital storage.

SEE OR SEARCH CLASS:

331, Oscillators, subclass 182 for specific amplitude control to produce tremolo.

381, Electrical Audio Signal Processing Systems and Devices, subclass 62 for vibrato or tremolo.

**663 Envelope shaping (i.e., attack, decay, sustain or release):**

This subclass is indented under subclass 662. Subject matter for providing or modifying an amplitude contour of an activated tone.

SEE OR SEARCH THIS CLASS, SUB-CLASS:

627+, for envelope shaping with digital storage.

SEE OR SEARCH CLASS:

327, Miscellaneous Active Electrical Non-linear Devices, Circuits, and Systems, subclasses 306+ for signal shaping by amplitude control.

333, Wave Transmission Lines and Networks, appropriate subclasses for network delay.

**664 Chorus, ensemble or celeste:**

This subclass is indented under subclass 662. Subject matter providing for the combining of a slightly detuned tone with the original tone.

SEE OR SEARCH THIS CLASS, SUB-CLASS:

631+, for chorus, ensemble, or celeste with digital storage.

**665 Loudness control:**

This subclass is indented under subclass 662. Subject matter wherein the amplitude or volume of the musical tones may be regulated.

- SEE OR SEARCH THIS CLASS, SUB-CLASS:  
633+, for loudness control with digital storage.
- 666 Accompaniment:**  
This subclass is indented under subclass 647. Subject matter wherein digital data represents a musical support or background.
- SEE OR SEARCH THIS CLASS, SUB-CLASS:  
610+, for accompaniment with note sequence.  
634+, for accompaniment with digital memory circuit.  
650+, for accompaniment with note sequence of digital combinational circuit.
- 667 Rhythm:**  
This subclass is indented under subclass 666. Subject matter wherein the information represents timing intervals of a musical piece.
- SEE OR SEARCH THIS CLASS, SUB-CLASS:  
611+, for rhythm with note sequence of digital storage.  
635+, for rhythm with accompaniment of digital storage.  
651+, for rhythm with accompaniment of digital combinational circuit.
- 668 Tempo control:**  
This subclass is indented under subclass 667. Subject matter wherein the rate or speed of rhythm is variable.
- SEE OR SEARCH THIS CLASS, SUB-CLASS:  
612+, for tempo control with note sequence of digital storage.  
636+, for tempo control with accompaniment of digital storage.  
652+, for tempo control of digital combinational circuit.
- 669 Chords:**  
This subclass is indented under subclass 666. Subject matter wherein the data represents a plurality of musical tones to be played simultaneously.
- SEE OR SEARCH THIS CLASS, SUB-CLASS:  
613+, for chords with digital memory circuit.  
637+, for chords with accompaniment.
- 670 Constructional details:**  
This subclass is indented under subclass 647. Subject matter including mechanical features of the musical instrument.
- SEE OR SEARCH THIS CLASS, SUB-CLASS:  
644, for construction details with digital storage.
- 671 Electric analog oscillators:**  
This subclass is indented under subclass 600. Subject matter wherein the varying electric currents or potentials originate from an analog oscillator.
- SEE OR SEARCH CLASS:  
331, Oscillators, appropriate subclasses for oscillator circuits, per se.
- 672 Variable frequency:**  
This subclass is indented under subclass 671. Subject matter wherein the oscillator is changed so that the discrete notes of a complete musical scale are obtained.
- 673 With variable filtering:**  
This subclass is indented under subclass 672. Subject matter wherein the output of the oscillator is applied to a filter wherein partials or harmonics to be removed can be varied.
- 674 With space discharging means:**  
This subclass is indented under subclass 672. Subject matter wherein the oscillator includes one or more devices in which conduction of electrons takes place through a vacuum or gaseous medium.
- 675 With frequency multiplication or division:**  
This subclass is indented under subclass 671. Subject matter wherein the discrete notes of a musical scale are derived through frequency multipliers or dividers.



- SEE OR SEARCH THIS CLASS, SUB-CLASS:  
648, for frequency multiplication or division with digital combinational circuit.
- 676 With transistor:**  
This subclass is indented under subclass 675. Subject matter wherein the oscillator, frequency multipliers or frequency dividers include a semiconductor device with three or more electrodes.
- SEE OR SEARCH CLASS:  
327, Miscellaneous Active Electrical Non-linear Devices, Circuits, and Systems, subclasses 113+ for frequency conversion or control.
- 677 With space discharging means:**  
This subclass is indented under subclass 675. Subject matter wherein the oscillators, frequency multipliers or frequency dividers include one or more devices in which conduction of electrons takes place through a vacuum or gaseous medium.
- SEE OR SEARCH THIS CLASS, SUB-CLASS:  
674, for space discharging mean with variable frequency.
- 678 Selecting circuits:**  
This subclass is indented under subclass 671. Subject matter including a circuit which selects a musical parameter, e.g., pitch or timbre.
- SEE OR SEARCH THIS CLASS, SUB-CLASS:  
615, for selecting circuit with digital storage.  
653, for selecting circuits with digital combinational circuit.
- 679 With transistor:**  
This subclass is indented under subclass 678. Subject matter wherein the oscillator, frequency multipliers or frequency dividers include a semiconductor device with three or more electrodes.
- SEE OR SEARCH THIS CLASS, SUB-CLASS:  
676, for transistor with frequency multiplication or division.
- SEE OR SEARCH CLASS:  
327, Miscellaneous Active Electrical Non-linear Devices, Circuits, and Systems, subclasses 113+ for frequency conversion or control.
- 680 With space discharging means:**  
This subclass is indented under subclass 678. Subject matter wherein the selecting circuit includes a device in which conduction of electrons takes place through a vacuum or gaseous medium.
- SEE OR SEARCH THIS CLASS, SUB-CLASS:  
674, for space discharging means with variable frequency.
- SEE OR SEARCH CLASS:  
327, Miscellaneous Active Electrical Non-linear Devices, Circuits, and Systems, subclasses 113+ for frequency conversion or control.
- 681 Fundamental tone detection or extraction:**  
This subclass is indented under subclass 678. Subject matter wherein the fundamental or pitch is detected and used to activate or modify a musical system.
- SEE OR SEARCH THIS CLASS, SUB-CLASS:  
616, for fundamental tone detection or extraction with digital storage.  
654, for fundamental tone detection or extraction with digital combinational circuit.
- 682 Multiplexing or scanning:**  
This subclass is indented under subclass 678. Subject matter wherein the selecting circuits are assigned by time-division multiplexing or scanning.
- SEE OR SEARCH THIS CLASS, SUB-CLASS:  
616, for multiplexing or scanning with digital storage.

- 655, for multiplexing or scanning with digital combinational circuit.
- 683 Noise reduction (e.g., error prevention):**  
This subclass is indented under subclass 678. Subject matter wherein circuitry is provided to reduce electrical noise, transients or unwanted disturbances.
- SEE OR SEARCH THIS CLASS, SUB-CLASS:  
621, for noise reduction (e.g., error prevention) with digital storage.
- SEE OR SEARCH CLASS:  
330, Amplifiers, subclass 149 for noise, hum or distortion bucking introduced into signal channel.  
381, Electrical Audio Signal Processing Systems and Devices, subclasses 71.1+ for acoustical noise or sound cancellation; subclasses 94.1+ for noise or distortion suppression.
- 684 Priority or preference circuits:**  
This subclass is indented under subclass 678. Subject matter wherein a plurality of musical notes or keys are selected with a certain note or notes having precedence over others; e.g., highest or lowest notes having priority.
- SEE OR SEARCH THIS CLASS, SUB-CLASS:  
618, for priority or preference circuits with digital storage.  
656, for priority or preference circuits with digital combinational circuit.
- 685 Transposition:**  
This subclass is indented under subclass 678. Subject matter wherein a musical piece is written or performed in a key other than the original or given key.
- SEE OR SEARCH THIS CLASS, SUB-CLASS:  
619, for transposition with digital storage.  
657, for transposition with digital combinational circuit.
- 686 Stops:**  
This subclass is indented under subclass 678. Subject matter wherein the circuit selects a musical voice, tone color, timbre or electrically simulated organ pipe sounds.
- SEE OR SEARCH THIS CLASS, SUB-CLASS:  
620, for stops with digital storage.
- 687 Force or velocity responsive:**  
This subclass is indented under subclass 678. Subject matter wherein the selecting circuit is responsive to the applied pressure, force or velocity.
- SEE OR SEARCH THIS CLASS, SUB-CLASS:  
626, for force or velocity responsive with digital storage.  
658, for force or velocity responsive with digital combinational circuit.
- SEE OR SEARCH CLASS:  
73, Measuring and Testing, subclasses 488+ for speed or acceleration testing.  
200, Electricity: Circuit Makers and Breakers, Dig. 32 for speed responsive switching.  
324, Electricity: Measuring and Testing, subclass 160 for speed or velocity measuring.  
338, Electrical Resistors, subclass 69 for variable resistance key activation devices.  
356, Optics: Measuring and Testing, subclass 28 for velocity measuring utilizing a light detector.  
362, Illumination, subclass 802 for a position or condition responsive switch.
- 688 With magnetic selector:**  
This subclass is indented under subclass 687. Subject matter wherein the selecting circuit includes a magnetic selector or selectors.
- 689 With capacitive selector:**  
This subclass is indented under subclass 687. Subject matter wherein the selecting circuit includes a capacitive selector or selectors.

- SEE OR SEARCH CLASS:  
200, Electricity: Circuit Makers and Breakers, Dig. 1 for capacitive switching.
- 690 With variable resistance selector:**  
This subclass is indented under subclass 687. Subject matter wherein the selecting circuit includes a variable resistor or resistors.
- SEE OR SEARCH CLASS:  
338, Electrical Resistors, subclasses 69+ for musical instrument playing key actuated variable resistance.
- 691 Noise reduction (e.g., error prevention):**  
This subclass is indented under subclass 671. Subject matter wherein circuitry is provided to reduce electrical noises, transients or unwanted disturbances.
- SEE OR SEARCH THIS CLASS, SUBCLASS:  
621, for noise reduction (e.g., error prevention) with digital storage.  
683, for noise reduction (e.g., error prevention) with electric analog oscillators.
- SEE OR SEARCH CLASS:  
341, Coded Data Generation and Conversion, subclasses 94+ for error detection or correction.
- 692 Tone synthesis or timbre control:**  
This subclass is indented under subclass 671. Subject matter wherein the harmonic content of a note is controlled or modified.
- SEE OR SEARCH THIS CLASS, SUBCLASS:  
622, for tone synthesis or timbre control with digital storage.  
659, for tone synthesis or timbre control with digital combinational circuit.
- SEE OR SEARCH CLASS:  
307, Electrical Transmission or Interconnection Systems, subclasses 106+ for waveform or waveshape determinative systems.
- 327, Miscellaneous Active Electrical Non-linear Devices, Circuits, and Systems, subclasses 100+ for miscellaneous signal converting, shaping, or generating.
- 333, Wave Transmission Lines and Networks, subclass 28 for audio tone control.
- 381, Electrical Audio Signal Processing Systems and Devices, subclass 101 for automatic tone control; subclass 118 for signal processing of musical instruments; subclasses 101 through 103 for automatic tone or equalization of an audio signal.
- 693 Time varying or dynamic fourier components:**  
This subclass is indented under subclass 692. Subject matter wherein the Fourier components are variable with respect to time.
- SEE OR SEARCH THIS CLASS, SUBCLASS:  
623, for time varying or dynamic Fourier components with digital storage.
- 694 Modulation:**  
This subclass is indented under subclass 692. Subject matter wherein tones are synthesized or modified by varying a carrier wave in accordance with a modulation wave.
- SEE OR SEARCH THIS CLASS, SUBCLASS:  
624, for modulation with digital storage.
- 695 Amplitude:**  
This subclass is indented under subclass 694. Subject matter wherein the carrier wave is amplitude modulated.
- SEE OR SEARCH CLASS:  
332, Modulators, subclasses 31+ for amplitude modulation.  
375, Pulse or Digital Communications, subclass 268 for amplitude modulation.
- 696 Angle (i.e., frequency or phase):**  
This subclass is indented under subclass 694. Subject matter wherein the carrier wave is angle (i.e., frequency or phase) modulated.

## SEE OR SEARCH CLASS:

- 332, Modulators, subclasses 16+ for phase or frequency modulation.
- 375, Pulse or Digital Communications, subclass 271 for angle modulation in systems using alternating or pulsating current.

**697 Mixing:**

This subclass is indented under subclass 692. Subject matter wherein two or more tones are combined to form a composite waveform.

## SEE OR SEARCH THIS CLASS, SUBCLASS:

- 625, for mixing with digital storage.
- 660, for mixing with digital combinational circuit.

## SEE OR SEARCH CLASS:

- 327, Miscellaneous Active Electrical Non-linear Devices, Circuits, and Systems, subclasses 113+ for a miscellaneous frequency mixing circuit.
- 381, Electrical Audio Signal Processing Systems and Devices, subclass 119 for audio system mixers, per se.

**698 Partial (i.e., harmonics):**

This subclass is indented under subclass 697. Subject matter wherein two or more partials or harmonics are combined to form a composite waveform.

**699 Filtering:**

This subclass is indented under subclass 692. Subject matter wherein a desired waveform is obtained by removing one or more partials or harmonics.

## SEE OR SEARCH THIS CLASS, SUBCLASS:

- 661, for filtering with digital combinational circuit.

## SEE OR SEARCH CLASS:

- 307, Electrical Transmission or Interconnecting Systems, subclass 105 for harmonic filter or neutralizer.
- 333, Wave Transmission Lines and Networks, subclass 167 for frequency domain filters using lumped parame-

ters; subclass 186 for electromechanical type filters.

**700 Variable:**

This subclass is indented under subclass 699. Subject matter wherein the partials or harmonics to be removed can be varied in accordance with a desired timbre or color.

**701 Expression or special effects:**

This subclass is indented under subclass 671. Subject matter for providing an indication of feeling or artistic execution to the musical tones.

## SEE OR SEARCH THIS CLASS, SUBCLASS:

- 626, for expression or special effects with digital storage.
- 662, for expression or special effects with digital combinational circuit.

**702 Envelope shaping (e.g., attack, decay, sustain or release):**

This subclass is indented under subclass 701. Subject matter for providing or modifying an amplitude contour of an activated tone.

## SEE OR SEARCH THIS CLASS, SUBCLASS:

- 627, for envelope shaping (e.g., attack, decay, sustain or release) with digital storage.
- 663, for envelope shaping (e.g., attack, decay, sustain or release) with digital combinational circuit.

## SEE OR SEARCH CLASS:

- 327, Miscellaneous Active Electrical Non-linear Devices, Circuits, and Systems, subclasses 306+ for signal shaping by controlling the amplitude thereof.
- 331, Oscillators, subclass 182 for amplitude control of an oscillator.

**703 Attack and decay:**

This subclass is indented under subclass 702. Subject matter for producing or modifying only the attack and decay of an activated tone.

## SEE OR SEARCH THIS CLASS, SUBCLASS:

- 627, for envelope shaping with digital storage.

- 663, for envelope shaping with digital combinational circuit.
- 704 Portamento or glissando:**  
This subclass is indented under subclass 701. Subject matter for producing an audible glide from one tone to a second tone.
- SEE OR SEARCH THIS CLASS, SUB-CLASS:  
628, for portamento or glissando with digital storage.
- 705 Tremolo:**  
This subclass is indented under subclass 701. Subject matter providing for rapid iteration of or a modulation in the amplitude of a note at subaudio frequencies.
- SEE OR SEARCH THIS CLASS, SUB-CLASS:  
629, for tremolo with digital storage.
- SEE OR SEARCH CLASS:  
381, Electrical Audio Signal Processing Systems and Devices, subclass 62 for tremolo or vibrato.
- 706 Vibrato:**  
This subclass is indented under subclass 701. Subject matter providing a modulation in the frequency or phase of a note at subaudio frequencies.
- SEE OR SEARCH THIS CLASS, SUB-CLASS:  
629, for vibrato with digital storage.
- SEE OR SEARCH CLASS:  
381, Electrical Audio Signal Processing Systems and Devices, subclass 62 for tremolo or vibrato.
- 707 Reverberation:**  
This subclass is indented under subclass 701. Subject matter providing for time delays that simulate a plurality of reflections of a given tone; e.g., echo.
- SEE OR SEARCH THIS CLASS, SUB-CLASS:  
630, for reverberation with digital storage.
- SEE OR SEARCH CLASS:  
381, Electrical Audio Signal Processing Systems and Devices, subclass 63 for reverberators, per se.
- 708 Chorus, ensemble or celeste:**  
This subclass is indented under subclass 701. Subject matter providing for the combining of a slightly detuned tone with the original tone.
- SEE OR SEARCH THIS CLASS, SUB-CLASS:  
631, for chorus, ensemble, or celeste with digital storage.  
664, for chorus, ensemble, or celeste with digital combinational circuit.
- SEE OR SEARCH CLASS:  
381, Electrical Audio Signal Processing Systems and Devices, subclass 89 for driven speaker systems to produce vibrato or chorus effects.
- 709 Trill:**  
This subclass is indented under subclass 701. Subject matter wherein the rapid alternation of two tones either a whole or a half tone apart.
- 710 Chiff or percussive transients:**  
This subclass is indented under subclass 701. Subject matter wherein transients are introduced into the initial sounding of the tone during the initial portion of the envelope to simulate the hiss or noise of an organ pipe.
- SEE OR SEARCH THIS CLASS, SUB-CLASS:  
632, for chiff or percussive transients with digital storage.
- 711 Loudness control:**  
This subclass is indented under subclass 710. Subject matter wherein amplitude or volume of the musical tones may be regulated.
- SEE OR SEARCH THIS CLASS, SUB-CLASS:  
633, for loudness control with digital storage.  
665, for loudness control with digital combinational circuit.

**712 Accompaniment:**

This subclass is indented under subclass 671. Subject matter for providing a musical support or background.

SEE OR SEARCH THIS CLASS, SUB-CLASS:

- 610, for accompaniment with note sequence of digital memory circuit.
- 634, for accompaniment with digital memory circuit.
- 650, for accompaniment with note sequence of digital combinational circuit.
- 666, for accompaniment with digital combinational circuit.

**713 Rhythm:**

This subclass is indented under subclass 712. Subject matter for creating or modifying the timing intervals of a music piece.

SEE OR SEARCH THIS CLASS, SUB-CLASS:

- 611, for rhythm with note sequence of digital memory circuit.
- 635, for rhythm with digital memory circuit.
- 651, for rhythm with note sequence of digital combinational circuit.
- 667, for rhythm with digital combinational circuit.

**714 Tempo control:**

This subclass is indented under subclass 713. Subject matter wherein the rate or speed of rhythm is variable.

SEE OR SEARCH THIS CLASS, SUB-CLASS:

- 612, for tempo control with note sequence of digital memory circuit.
- 636, for tempo control with digital memory circuit.
- 652, for tempo control with note sequence of digital combinational circuit.
- 668, for tempo control with digital combinational circuit.

**715 Chords:**

This subclass is indented under subclass 712. Subject matter wherein a plurality of notes are played simultaneously.

SEE OR SEARCH THIS CLASS, SUB-CLASS:

- 613, for chords with note sequence of digital memory circuit.
- 637, for chords with digital memory circuit.
- 669, for chords with digital combinational circuit.

**716 Arpeggio:**

This subclass is indented under subclass 712. Subject matter wherein the notes of a chord are played in sequence.

SEE OR SEARCH THIS CLASS, SUB-CLASS:

- 638, for arpeggio with digital storage.

**717 Reiteration:**

This subclass is indented under subclass 712. Subject matter wherein plural tones are repetitively played in sequence one at a time.

SEE OR SEARCH THIS CLASS, SUB-CLASS:

- 614, for reiteration with digital storage.

**718 Constructional details:**

This subclass is indented under subclass 671. Subject matter including mechanical features of the musical instrument.

SEE OR SEARCH THIS CLASS, SUB-CLASS:

- 2+, for dealing with specifics of musical instrument construction.
- 644, for construction details with digital storage.
- 670, for construction details with digital combinational circuit.

**719 Keyboard:**

This subclass is indented under subclass 718. Subject matter wherein the mechanical feature is a keyboard or a fret-board.

SEE OR SEARCH THIS CLASS, SUB-CLASS:

- 691, for noise reduction with electric analog oscillators.

## SEE OR SEARCH CLASS:

341, Coded Data Generation and Conversion, subclasses 22+ for code selecting devices, e.g., keyboards or keypads.

**720 Keyswitch structure:**

This subclass is indented under subclass 718. Subject matter wherein the mechanical feature is a keyswitch.

## SEE OR SEARCH CLASS:

200, Electricity: Circuit Makers or Breakers, appropriate subclasses for specific switch construction details.

**721 Foot control:**

This subclass is indented under subclass 718. Subject matter wherein the mechanical feature is a foot controlled device.

## SEE OR SEARCH CLASS:

200, Electricity: Circuit Makers or Breakers, subclass 86.5 for foot controlled switches, per se.

**722 Fret control:**

This subclass is indented under subclass 671. Subject matter wherein oscillators are controlled via a stringed musical instrument fingerboard; e.g., switches on the guitar fingerboard.

## SEE OR SEARCH THIS CLASS, SUBCLASS:

646, for fret control with digital storage.

**723 Transducers:**

This subclass is indented under subclass 600. Subject matter including means which converts energy other than electrical into electrical energy.

## SEE OR SEARCH CLASS:

29, Metal Working, subclass 594 for methods of making an acoustic transducer.

178, Telegraph, subclasses 47 and 48 for electrical signaling systems in which vibrating means such as reeds, tuning forks and diaphragms are utilized in transmitting or receiving messages or signals.

310, Electrical Generator or Motor Structure, appropriate subclasses for general application of converting mechanical motion to electrical currents or potentials.

322, Electricity: Single Generator Systems, appropriate subclasses for general application of converting mechanical motion to electrical currents or potential, particularly subclass 3 for reciprocating or oscillating generator systems.

704, Data Processing: Speech Signal Processing, Linguistics, Language Translation, and Audio Compression/Decompression, subclasses 200 through 504 for speech signal processing, or bandwidth, or time compression, or expansion of an audio signal.

**724 Photoelectric:**

This subclass is indented under subclass 723. Subject matter including means which converts varying light intensity into varying electric currents or potential.

## SEE OR SEARCH THIS CLASS, SUBCLASS:

639, for photoelectric with digital storage.

## SEE OR SEARCH CLASS:

250, Radiant Energy, subclasses 200+ for photocell electric circuits and photocell apparatus; subclasses 206+ for photocell with coded record; subclasses 232+ for photocells with light chopper type.

330, Amplifiers, subclass 59 for amplifiers including light controlled or light activated means.

369, Dynamic Information Storage or Retrieval, subclasses 86+ for storage or retrieval of audio signals.

**725 Electromagnetic:**

This subclass is indented under subclass 723. Subject matter including means which converts varying magnetic flux into varying electric currents or potentials.

## SEE OR SEARCH THIS CLASS, SUBCLASS:

641, for magnetic with digital storage.

## SEE OR SEARCH CLASS:

- 29, Metal Working, subclasses 602.1+ for methods of manufacturing an electro-magnet, transformer or indicator.
- 336, Inductor Devices, appropriate subclasses for inductive reactors and transformers which are provided with fixed or movable elements (e.g., having a moving armature to modify the impedance of an inductive reactor).
- 381, Electrical Audio Signal Processing Systems and Devices, subclass 115 for magnetic microphone.

**726****String:**

This subclass is indented under subclass 725. Subject matter wherein the varying magnetic flux is caused by a moving string.

## SEE OR SEARCH THIS CLASS, SUB-CLASS:

- 7+, 172, 173+, for miscellaneous stringed instruments.

**727****With adjustable means:**

This subclass is indented under subclass 726. Subject matter wherein the transducer or a component thereof is adjustable relative to a string.

**728****Noise reduction (e.g., error prevention):**

This subclass is indented under subclass 726. Subject matter wherein circuitry is provided to reduce electrical noises, transients or unwanted disturbances.

## SEE OR SEARCH THIS CLASS, SUB-CLASS:

- 621, for noise reduction with digital storage.
- 683, for noise reduction with selecting circuit of analog oscillators.
- 691, noise reduction with analog oscillators.

## SEE OR SEARCH CLASS:

- 375, Pulse, or Digital Communications, subclasses 284 and 285 for antinoise or distortion systems using alternating or pulsating current.

- 381, Electrical Audio Signal Processing Systems and Devices, appropriate subclass acoustical noise or sound cancellation; subclasses 94.1+ for noise or distortion suppression.

**729****Reed:**

This subclass is indented under subclass 725. Subject matter wherein the varying magnetic flux is caused by a moving elongated flexural strip or bar with a relatively large length to width ratio.

## SEE OR SEARCH THIS CLASS, SUB-CLASS:

- 402+, and 411+, for miscellaneous musical instruments employing rigid vibrators.

**730****Piezoelectric:**

This subclass is indented under subclass 723. Subject matter wherein a varying mechanically stressed crystal causes a varying current or voltage.

## SEE OR SEARCH CLASS:

- 29, Metal Working, subclass 29.35 for methods of making a piezoelectric device.
- 310, Electrical Generator or Motor Structure, subclasses 311+ for piezoelectric elements and devices.
- 381, Electrical Audio Signal Processing Systems and Devices, subclass 114 for piezoelectric microphone.

**731****String:**

This subclass is indented under subclass 730. Subject matter wherein the varying mechanical stress is caused by a string.

## SEE OR SEARCH THIS CLASS, SUB-CLASS:

- 7+, 172 and 173+, for miscellaneous stringed instruments.
- 726, for string with electromagnetic transducer.

**732****Reed:**

This subclass is indented under subclass 730. Subject matter wherein the varying mechanical stress is caused by an elongated flexural strip or bar with a relatively large length to width ratio.



SEE OR SEARCH THIS CLASS, SUB-CLASS:

402+, and 411+, for miscellaneous musical instruments employing rigid vibrators.

729, for reed with electromagnetic transducer.

### 733 **Capacitive:**

This subclass is indented under subclass 723. Subject matter wherein a varying capacitance produces a varying electric current or potential.

SEE OR SEARCH CLASS:

200, Electricity: Circuit Makers and Breakers, subclass 181 and Dig. 1 for electrostatic switches.

361, Electricity: Electrical Systems and Devices, subclasses 271+ for electrostatic capacitors.

381, Electrical Audio Signal Processing Systems and Devices, subclass 113 for electrostatic microphone.

### 734 **Strain gauge:**

This subclass is indented under subclass 723. Subject matter wherein a varying force, tension or pressure is converted into a varying electrical current or potential.

SEE OR SEARCH CLASS:

29, Metal Working, subclass 621.1 for methods of making strain gauges.

338, Electrical Resistors, subclasses 2+ for strain gauges; subclass 69 for variable resistors controlled by musical instrument playing keys.

### 735 **Tone synthesis or timbre control:**

This subclass is indented under subclass 723. Subject matter wherein the harmonic content of a note is controlled or modified.

SEE OR SEARCH THIS CLASS, SUB-CLASS:

622, for tone synthesis or timbre control with digital storage.

659, for tone synthesis or timbre control with digital combinational circuit.

692, for tone synthesis or timbre control with electric analog oscillators.

SEE OR SEARCH CLASS:

307, Electrical Transmission or Interconnection Systems, subclass 3 for circuits in which different frequencies are superimposed; subclasses 106+ for waveform or waveshape determinative systems.

310, Electrical Generator or Motor Structure, appropriate subclasses for dynamoelectric frequency changers.

327, Miscellaneous Active Electrical Non-linear Devices, Circuits, and Systems, subclasses 100+ for miscellaneous signal converting, shaping, or generating, and particularly subclasses 113+ for miscellaneous harmonic generators.

331, Oscillators, appropriate subclasses for general harmonic generators.

333, Wave Transmission Lines and Networks, subclass 28 for audio tone controls.

363, Electric Power Conversion Systems, subclasses 157+ for electric power frequency conversion systems.

381, Electrical Audio Signal Processing Systems and Devices, subclass 101 for automatic tone control; subclass 118 for signal processing of musical instruments, per se; subclasses 101 through 103 for automatic tone control or equalization of audio signals.

### 736 **Filtering:**

This subclass is indented under subclass 735. Subject matter wherein a desired waveform is obtained by removing one or more partials or harmonics.

SEE OR SEARCH THIS CLASS, SUB-CLASS:

661, for filtering with digital combinational circuit.

699+, for filtering with electric analog oscillators.

SEE OR SEARCH CLASS:

327, Miscellaneous Active Electrical on linear Devices, Circuits, and Systems, subclass 311 for transient limiting utilizing a filter and subclasses 552+ for unwanted signal suppression with an active filter.

- 330, Amplifiers, subclass 303 for filters included or in conjunction with an amplifier.
- 333, Wave Transmission Lines and Networks, subclasses 167+ for lumped parameter filters; subclass 165 for frequency or time domain filters and delay lines; subclass 166 for time domain filters.
- 708, Electrical Computers: Arithmetic Processing and Calculating, subclasses 300+ for digital filters.
- 737 Expression or special effects:**  
This subclass is indented under subclass 723. Subject matter for providing "feeling" or artistic execution to the musical tones.
- SEE OR SEARCH THIS CLASS, SUB-CLASS:  
33+, for expression mechanism.  
157, for modified expression.  
164, for expression and tempo marks.  
216+, for expression devices.  
313, for tremolo devices.  
374, for fan tremolo devices.  
626, for expression or special effects with digital storage.  
662, for expression or special effects with digital combinational circuit.  
701, for expression or special effects with electric analog oscillators.
- 738 Envelope shaping (e.g., attack, decay, sustain or release):**  
This subclass is indented under subclass 737. Subject matter for providing or modifying the contour of an activated tone.
- SEE OR SEARCH THIS CLASS, SUB-CLASS:  
627, for envelope shaping with digital storage.  
663, for envelope shaping with digital combinational circuit.  
702, for envelope shaping with electric analog oscillators.
- 739 Tremolo:**  
This subclass is indented under subclass 737. Subject matter providing for rapid iteration of or a modulation in the amplitude of a note at sub-audio frequencies.
- SEE OR SEARCH THIS CLASS, SUB-CLASS:  
629, for tremolo with digital storage.  
705, for tremolo with electric analog oscillators.
- SEE OR SEARCH CLASS:  
332, Modulators, subclasses 31+ for amplitude modulation.  
375, Pulse or Digital Communications, subclasses 268+ for amplitude modulation.  
381, Electrical Audio Signal Processing Systems and Devices, subclass 62 for general purpose tremolo.
- 740 Vibrato:**  
This subclass is indented under subclass 737. Subject matter providing a modulation in the frequency or phase of a note at sub-audio frequencies.
- SEE OR SEARCH THIS CLASS, SUB-CLASS:  
629, for vibrato with digital storage.  
706, for vibrato with electric analog oscillators.
- SEE OR SEARCH CLASS:  
331, Oscillators, subclass 178 for providing vibrato in the oscillator output frequency.  
332, Modulators, subclasses 16+ for frequency modulation.  
375, Pulse or Digital Communications, subclasses 271+ for angle modulation.  
381, Electrical Audio Signal Processing Systems and Devices, subclass 62 for general purpose vibrato.
- 741 Loudness control:**  
This subclass is indented under subclass 737. Subject matter wherein amplitude or volume of the musical tone may be regulated.
- SEE OR SEARCH THIS CLASS, SUB-CLASS:  
633, for loudness control with digital storage.  
665, for loudness control with digital combinational circuit.  
711, for loudness control with electric analog oscillators.

**742 Selecting circuits:**

This subclass is indented under subclass 723. Subject matter including a circuit which selects a musical parameter; e.g., pitch or timbre.

SEE OR SEARCH THIS CLASS, SUB-CLASS:

- 615, for selecting circuits with digital storage.
- 653, for selecting circuits with digital combinational circuit.
- 678, for selecting circuits with electric analog oscillators.

**743 Constructional details:**

This subclass is indented under subclass 723. Subject matter including mechanical features of the musical instrument.

SEE OR SEARCH THIS CLASS, SUB-CLASS:

- 2+, for dealing with musical instrument construction.
- 644, for construction details with digital storage.
- 670, for construction details with digital combinational circuit.
- 718, for construction details with electric analog oscillators.

**744 Keyboard:**

This subclass is indented under subclass 743. Subject matter wherein mechanical feature is a keyboard or a fretboard.

SEE OR SEARCH THIS CLASS, SUB-CLASS:

- 423, for keyboard structure.
- 719, for keyboard with electric analog oscillators.

**745 Keyswitch structure:**

This subclass is indented under subclass 743. Subject matter wherein the mechanical feature is a keyswitch.

SEE OR SEARCH THIS CLASS, SUB-CLASS:

- 720, for keyswitch structure with electric analog oscillators.

**746 Foot control:**

This subclass is indented under subclass 743. Subject matter wherein the mechanical feature is a foot controlled device.

SEE OR SEARCH THIS CLASS, SUB-CLASS:

- 721, for foot control with electric analog oscillators.

END